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SCIENCES

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Hawaii's building boom
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10 Special rig built to insert joint fillers

16 New framing system cuts cost for one story buildings

66 Arch falsework for highway bridge moves on rails

ONTRACTORS and ENGINEERS

A Builderstein Publication

GAZINE OF MODERN CONSTRUCTION AUGUST 1960

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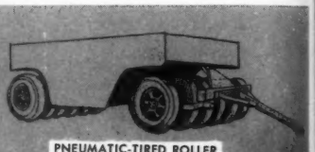

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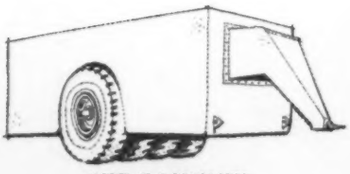

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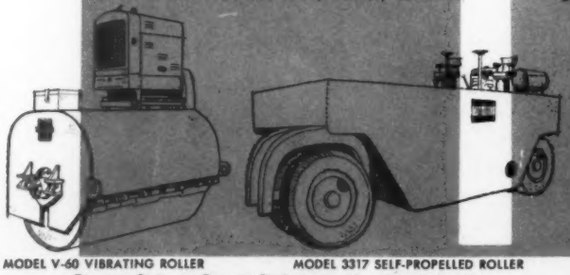

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For more facts, use Request Card at page 18 and circle No. 251

CONTRACTORS and ENGINEERS

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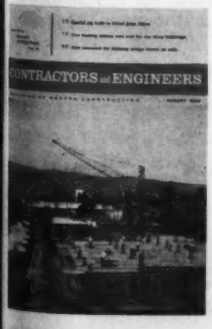

COVER:

The first Universal Tower-crane to work in Hawaii handles materials and concrete for the twin 17-story additions to the Hawaiian Village Hotel in the Waikiki Beach area. The newest state is having a boom, with some $181,362,752 worth of buildings planned, under construction, or just finished. *Page 36.*

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Editorial

Sticks and stones—and highways

Last month one of the big mass-circulation magazines in the country tossed some brickbats at the federal highway program in an article charged with such accusations as waste, mismanagement, graft, bureaucratic stupidity, and thievery. While the bulk of the blame for what the publication termed a "nightmare" was laid at the door of state and local highway administrations, the U. S. Bureau of Public Roads was hit with the term "inept." The writer also urged anyone who knew of tax dollars being wasted in the road program to report such evidence to a Congressional subcommittee investigating the situation. This was ironic, for only a few weeks before, one of the big mass-circulation picture magazines had "exposed" several congressmen for free-loading on various Congressional junkets with their wives and families. And this particular subcommittee membership was well represented on the list of those congressmen who reportedly live high off the public.

Like many articles that are written only to create a sensation, this feature on "our great big highway bungle" listed none of the accomplishments of the federal highway program. Instead, it recommended that the program be stopped. It mentioned the "dream" of a 40,000-mile superhighway network (it is actually a 41,000-mile system), but nowhere did it state that 9,000 miles of interstate and defense highways are now open, and that work is under way on 15,000 more miles of the national system.

To accomplish all this in four short years, the road builders were doing more than just bungling and muddling along. We are offering no defense of the many examples of local greed in highway affairs cited by the article. Most of these stem from the machinations of local politicians of both major political parties. Nor is it just petty larceny in the one instance cited of collusion, between a contractor and state highway engineers and inspectors, in overpaying the contractor more than half a million dollars for a road completed in 1958. The road, incidentally, is now breaking up. But the case of the dishonest contractor is rare, if for no other reason than that he would have to have the state's representatives as his partners.

Fortunately, the vast majority of those making up the road-building fraternity are dedicated men whose sole interest is to build as well as they can according to plans and specifications, after bidding for the job under the contract system. The latter, of course, insures the contract going to the lowest bidder and not to any political favorite.

In a recent speech before the Western Association of State Highway Officials, Ellis L. Armstrong, Commissioner, U. S. Bureau of Public Roads, said this:

"One of our problems in getting full appreciation of the accomplishments has been that our new roads are being opened in relatively short sections. Usually, on our Interstate itself, the sections of two or five or maybe ten miles are opened to traffic with little or no fanfare. In many instances I suspect the motorist doesn't realize the new road is a part of our Interstate; he does know it is a wonderful new road and a boon to traffic."

The Bureau of Public Roads, moreover, is active in many fields that have for their ultimate objective the design, construction, and maintenance of highways in the best possible way and at the lowest possible cost. The general public may be totally unaware of most of this work. To cite just one example, there is the BPR project developing a performance type of equipment specification. Such a set of spex establishes a base line for competition, thus obviously eliminating mediocre products. Equipment manufacturers can be guided accordingly in designing and producing machines that have this desired built-in performance. BPR engineers worked with manufacturers to establish fixed rules for rating the horsepower available on equipment. Industry and government exercised joint cooperation in this endeavor. The first machine to be so analyzed was the ubiquitous motor grader—the jack-of-all-work for the lowliest road-patrol foreman or the biggest construction organization.

Now BPR technicians are scrutinizing compaction equipment to obtain performance data on the various sizes and types of rollers. They hope thus to reach practical solutions to some pressing problems of compaction. Equipment manufacturers will benefit from more realistic and uniform equipment requirements. So will the contractor. But most of all, this development will protect the interests of the taxpayer. How? By enabling the contractor to buy a machine that will do a job better and more economically, thus reducing his bid price. Far from being "inept," the Bureau of Public Roads is very much on the alert and is functioning to see that the taxpayer gets the best road for his dollar. It cannot be expected to be a policeman also.

CONTRACTORS and ENGINEERS

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Business Comment

Speed-Up

A new Bureau of Public Roads ruling permits states to obligate during the current three months as much in federal-aid funds as the bureau had originally scheduled for the six months through the end of the year. By so doing, the BPR has encouraged a speed-up in highway contract-award activity that may double the anticipated rate.

The original reimbursement schedule, released on June 10, would have allowed the states to obligate up to $718,403,300 during the July–September quarter. The ceiling for interstate contractual obligations had been set at $500 million, and that for primary and secondary roads at $218,403,000. Under the accelerated schedule, the states may use up to $1 billion of interstate money and $436,806,000 of ABC funds in this 3-month period.

The reimbursement controls now being used to stimulate road-building activity were first instituted in 1959, when a $2.7 billion limit was set on federal-aid funds that could be spent in fiscal 1960. The purpose of the controls is to keep the road program on a pay-as-you-go basis.

The ceiling was raised 6 per cent to $2,873,613,000 for fiscal year 1961, which began July 1 of this year. This level compares favorably with those for the previous years of the road program. Obligations incurred totaled $2.2 billion in 1957, $2.7 billion in 1958, and $3.2 billion in 1959.

Because under the accelerated schedule some contracts will be awarded sooner than had been anticipated, actual spending this fiscal year is likely to exceed the fiscal 1961 ceiling of $2.87 billion of federal-aid money.

This assumes, of course, that the states have enough projects ready to go and the required available matching funds to take advantage of extra federal money available for the current quarter.

Some states also have unused reimbursible balances from fiscal 1960 that remain available for use in fiscal 1961. In addition, states in a position to proceed faster than the BPR schedule allows are free to do so. However, in such cases, the timing of federal reimbursement will depend on the availability of trust-fund revenues.

But for the pay-as-you-go principle, the fiscal 1961 allocation for the ABC primary and secondary system would have been $50 million higher. The BPR held this amount back from states that had borrowed $103 million from the Highway Trust Fund under the provisions of the emergency road legislation of 1958. The balance still owed will be subtracted from fiscal 1962 funds.

Secretary of Commerce Frederick H. Mueller has announced his intent to apportion $2.2 billion of federal aid for interstate highways for fiscal 1962. This is the full amount authorized by the Federal-Aid Highway Act of 1956, and it will bring the total apportioned for the Interstate System during 1957–62 to $11.4 billion.

ALLOWABLE OBLIGATIONS OF FEDERAL-AID ROAD FUNDS
Accelerated Schedule: July-September 1960

STATE	APPROXIMATE DISTRIBUTION (add 000)	STATE	APPROXIMATE DISTRIBUTION (add 000)	STATE	APPROXIMATE DISTRIBUTION (add 000)
Alabama	$ 26,680	Maine	$ 7,788	Oregon	$ 22,396
Alaska	18,326	Maryland	25,550	Pennsylvania	58,290
Arizona	18,000	Massachusetts	33,750	Rhode Island	6,700
Arkansas	15,218	Michigan	51,804	South Carolina	13,434
California	117,792	Minnesota	28,136	South Dakota	16,568
Colorado	13,922	Mississippi	17,230	Tennessee	36,202
Connecticut	15,318	Missouri	37,830	Texas	66,496
Delaware	9,580	Montana	26,164	Utah	13,010
Florida	30,996	Nebraska	21,948	Vermont	10,538
Georgia	32,004	Nevada	11,286	Virginia	47,410
Hawaii	1,956	New Hampshire	7,170	Washington	23,628
Idaho	14,958	New Jersey	38,256	West Virginia	16,172
Illinois	66,440	New Mexico	16,774	Wisconsin	27,936
Indiana	36,930	New York	72,880	Wyoming	13,750
Iowa	17,632	North Carolina	26,288	Dist. of Col.	13,108
Kansas	18,048	North Dakota	8,600	Puerto Rico	2,986
Kentucky	23,710	Ohio	77,294		
Louisiana	31,064	Oklahoma	16,356	TOTAL	$1422,202

CONTRACTORS and ENGINEERS table from Bureau of Public Roads release G 60-79

Laying second course of plant-mix Texaco Asphaltic Concrete pavement on highway through Ocala National Forest.

View of right of way cut through virgin forest for new highway. Limerock foundation at left is ready for Texaco Asphalt pavement.

Contractor: MARION CONSTRUCTION COMPANY, Ocala, Fla.

Builds ASPHALT highway through virgin forest

The Florida State Road Department has constructed 13 miles of Asphalt-paved highway through the Ocala National Forest, in the state's northeastern corner. All but half a mile of this highway is located on new right of way, cut through virgin forest and swamp.

Plant-mixed Texaco Asphaltic Concrete, laid in two courses with a combined thickness of three inches, gives this highway a highly durable and resilient surface. Supporting it is an 8½ inch foundation of limerock. A Texaco Asphaltic Concrete pavement like this one withstands hard usage year after year with a minimum of maintenance. It is speedily laid and ready for traffic, because it requires no time consuming curing period. Motorists prefer the velvet smooth riding quality of its resilient, joint-free surface. Thanks to its skid-resistant texture and the sharp visibility of traffic lines on its dark surface, Texaco Asphaltic Concrete greatly reduces the danger of accidents.

Whether your highway or street project calls for heavy-duty, intermediate or low-cost paving, there is a type of Texaco Asphalt construction exactly suited to your requirements. If you would like assistance with a paving problem, our 55 years of Asphalt experience is at your service. Ask our nearest office to have one of our field representatives contact you.

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For more facts, use Request Card at page 18 and circle No. 252

Surveying Washington

by E. E. Halmos, Jr.

Congress back to tackle bills important to construction

Coming back to work this month after a political "vacation," Congress has important matters to settle. Bearing heavily on the construction industry are such items as federal aid for school construction (if anything gets through, it'll mean perhaps $500 million of additional construction money); area-redevelopment legislation (carrying at least $181 million of construction money); public-works appropriations (about $1 billion); minimum-wage and common-situs picketing regulations.

Before adjourning, Congress had already passed appropriations for military construction totaling $1.07 billion; for ABC (primary, rural, and urban) highways, $925 million; and for the Departments of Commerce, Interior, Health-Education-Welfare, Agriculture, and Defense roughly $40 billion, not including military construction. Authorizations (about $1.4 billion) for future public and civil-works projects were also okayed. Money will come later.

And Congress had taken action on a number of other measures, including killing the controversial HR 9996 (which would have eased import restrictions on foreign-surplus machinery) after heavy protest from manufacturers, and eliminating provisions from a military procurement bill (HR 12752) that appeared to require bidding by engineers and architects on professional service contracts.

Politicos pushing bills for "show" this season

Of course, there are still thousands of other measures in the Congressional hoppers, and the decision to return to work threw a lot of calculations into the discard. Legally, the "vacation" was a "recess," so all legislation remains active. However, as predicted earlier in this column, political advantage will be the key factor in the extended sessions; most bills that don't promise a political payoff are still dead.

The school-aid and the area-assistance bills, among others, are examples of what the heavy political aspect could mean. There's a lot of pressure for school-construction aid, though neither party really wants a big bill. When both houses of Congress passed widely differing bills, the House Rules Committee blocked a "conference" to reconcile the two measures, and everybody—except possibly educators—was reasonably happy since both sides could claim efforts to get a bill through, and both could blame the rules committee for failure. But with the session reconvening, the lack-of-time excuse no longer exists, and some sort of bill may be forced through.

Area assistance is in the same category: The President vetoed the first bill, calling for $250 million in construction money, and two Administration substitutes were immedi[ately] offered, without much hope of a[ction] but good for "show." Now, [with] political pressure may force some [ac]tion. That also goes for HR 10, w[hich] would aid the self-employed thr[ough] tax deductions for self-financed [re]tirement plans; it would be a g[ood] vote getter for independent busi[ness]men, farmers, contractors, and [en]gineers.

Minimum-wage adjustment, other labor bills up again

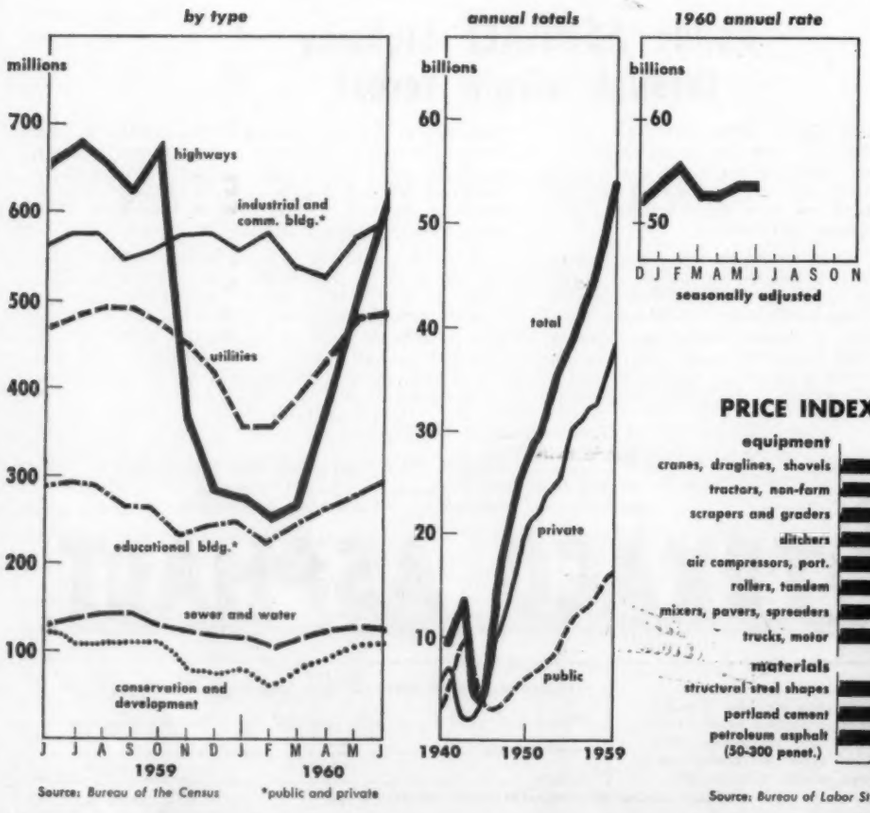
Of special importance in this c[ate]gory of bills that might be forced [up] by the lengthened session is [the] group affecting the minimum w[age], common-situs picketing, and ot[her] matters of interest to construc[tion] labor.

Until the last days before the [re]cess, it was pretty well establi[shed] that labor would get one thing [out] of this session—the minimum-w[age] adjustment. Other things would [be] allowed to slide until the next t[ime] around, after January. But in dea[ling] with the minimum wage, the Ho[use] finally became so confused, [after] spending a whole day making amend[ments] to amendments to amend[ments], that it actually succeeded [in] taking some 14 million already co[v]ered workers out from under cove[r]age, while members thought the[y] were adding 1.4 million more. The result was that the bill was com[pl]etely stalled and will have to be taken up again this month when the Congress returns.

Industry Trends

DOLLAR VALUE OF NEW CONSTRUCTION

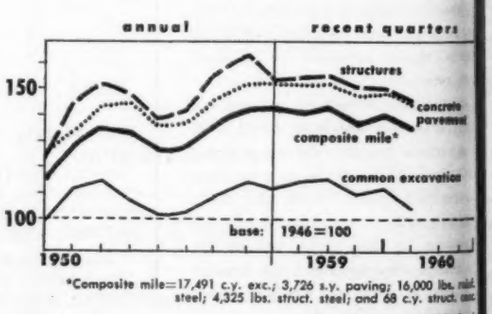
Recent Monthly Trends



Source: *Bureau of the Census* *public and private

AVERAGE BID PRICES

Federal Aid Highway Construction



*Composite mile=17,491 c.y. exc.; 3,726 s.y. paving; 16,000 lbs. rein. steel; 4,325 lbs. struct. steel; and 68 c.y. struct. conc.

Source: *Bureau of Public Roads*

PRICE INDEX 1947-1949 = 100

Source: *Bureau of Labor Statistics' Wholesale Prices and Indexes*

Depreciation for tax purposes to be reviewed

On taxes, you'll want to watch for results—probably some time next year—of a survey just started by the Treasury Department into the workings and application of depreciation write-offs on machinery and equipment.

Behind the action is a strong feeling, both in the Administration and

Congress, that present allowances for obsolescence and wear and tear aren't sufficiently liberal and thus inhibit investment by business. It's quite possible that tax laws may be changed next year in this regard. Treasury has sent out some 2,700 questionnaires on the subject to "representative" taxpayers; Small Business Administration will send out several thousand more.

If your company, for instance, is in the maximum (52 per cent) tax bracket, each extra dollar of depreciation allowed means a tax saving of about 52 cents.

Status of legislation on other construction bills

Just to complete the legislative box score, as Congress returns, here's a quick rundown on the status of other legislation of interest to construction men:

On S 2643, HR 9070, and other bills permitting on-situs picketing, there is some possibility of action. HR 9371, to aid housing by adding $1 billion authority to FNMA for secondary mortgage purchases, has been debated in the House, but it is not considered likely to pass both houses.

There has been no action, and none is expected, on the following bills: HR 11711, on the separation of mechanical bids; HR 9586, requiring alternate specifications for flexible and rigid pavement for all federal highway jobs; S 3292, to establish a Department of Housing and Metropolitan Affairs; HR 9691, to authorize construction of a Fisheries Exhibit building and other work in Washington; and HR 11916, to establish a new classification of engineering registration (Federal Engineer).

Debate had been started on amendments to the Social Security laws to provide medical care for the aged—and with it, construction money for nursing homes, etc.—but whether anything would be passed was a tossup.

Both houses had approved federal participation in construction of California's $2 billion San Luis Project; in a $100 million flood-control and irrigation project—Amistad Dam—on the Rio Grande (with Mexico); and in a $400 million scheme for rapid transit in Washington. Extension of the Saline Water research program and added research into air pollution by motor vehicles were also given approval by both houses of Congress.

Extra highway money cut from appropriations

The Senate's sudden action of adding an extra $100 million to the highway appropriation (and 250 miles of interstate roads for Alaska) was killed—as expected—by House conferees.

The Senate's action might well have blocked the entire ABC highway program. Its Public Works Committee inserted the extra $100 million at the insistence of Sen. Jennings Randolph (D., W. Va.) and others to aid depressed areas but—just as in the now famous highway act, which is the reason for present strictures on highway fund allocations—it made no provision for reimbursing the Highway Trust Fund.

Meanwhile, the Bureau of Public Roads announced the allocation of $2.7 billion to the states for all highway purposes for fiscal year 1961—a drop below previous allocations—because of the shortages of trust fund money. It was reported in Washington that the states were being quietly urged to put as many road jobs as possible under contract during the last half of the current calendar year, to make up in part for slow lettings (mostly because of weather) in the first half.

The new No. 12 Series E Motor Grader spreads untreated base and handles cleanup for Massey Sand and Rock Company

THE NEW NO. 12E SETS THE STANDARDS

Widening U. S. 60-77-99 to a 4-lane limited-access highway, Massey Sand and Rock Company of Indio, California, recently added a new No. 12E Motor Grader to its Cat fleet. The improvements, effective with this new series machine, showed up immediately. As Tom W. Carter, manager of the firm, puts it: "The increased productivity of the new No. 12 was very noticeable. You can depend on new Cat products to give greater operator comfort and better productivity."

One of the big reasons for the new performance standards of the No. 12 is the new compact 115 HP engine. Incorporating the latest developments in metallurgy and design, this modern engine has greater lugging ability for the tough jobs, long life and easier servicing.

Caterpillar engineers did not stop with just a compact diesel. There's a new vertical starting engine to give easier, all-weather starting. The dry-type air cleaner is now standard—it removes 99.8 per cent of air-borne dirt every service hour, cuts maintenance.

Of course, the new No. 12 retains the dependable Caterpillar oil clutch that gives up to 2000 hours without adjustment; mechanical controls that engage easily; and plenty of throat clearance between moldboard and circle for improved rolling action.

See your Caterpillar Dealer. He'll show you—on your job—that the No. 12E lives up to what users are saying about it. He can also show you the 150 HP No. 14, the No. 112F with 100 HP and the No. 112E with 85 HP—they're built to be the best for the job.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

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THE NEW NO. 12 MOTOR GRADER BUILT FOR THE TOUGH JOBS

For more facts, use Request Card at page 18 and circle No. 253

Tricks of the Trade

Snap ties for column forms ease work, cut costs

Column forms, held together by snap ties and wedges, are economical to build and easy to erect. The hardware costs little to buy and is easily carried about the job.

This is the way they are built. One pair of opposing sides of the 14-inch-square column is formed with a ¾-inch plywood backed by 2×4's on 1-foot centers. The 2×4's are nailed flatwise to the plywood. To the opposite side of the plywood are nailed two additional 2×4's. These run for the 6-foot height of the column and serve as backing for the adjoining pair of sides.

At the ends of the short 2×4 wales are holes for the insertion of the snap-tie rods. Wedges at both ends of the tie rods tighten the forms. A snap tie differs from the standard tie by not having a break-back collar. It is a straight small-diameter rod.

The second pair of opposing sides is of plain ¾-inch sheets cut to the column size. Their only backing is supplied by the long 2×4's nailed to the other sides.

The forms proved to be a money-saver for F. D. Rich Co., Inc., Stamford, Conn., while working on a 50-bed hospital at the K. I. Sawyer Army Air Force Base near Marquette, Mich. Credit for the idea goes to carpenter foreman Arne Kilpela. His superintendent, Leonard Sanppala, stands beside the column form with tie assembly in hand.

Periodic cutting adds to cable life

There's a simple method that can be used to lengthen the life of wire rope for cable equipment.

Periodically, several feet can be cut from the end of each piece of cable. A weekly interval is just about right for scraper and dozer blades.

On every hoisting job, there's a spot where the rope is constantly bent over a sheave when the load is heaviest. This section wears faster than the other part of the rope and will be the first spot to weaken. Many times, this spot is midway between the cable end and the reel; the result is a costly waste of rope. The wear spots can be relocated, and wear evenly distributed throughout the cable length, by removing the cable from the control-unit drum, pulling through a foot of it, and cutting off the excess.

Break-in period

Rebuilt transmissions, differentials, transfer cases, planetary assemblies and similar units require the same careful break-in period that is usually accorded rebuilt engines.

The normal procedure, when an engine is put into service, is to handle it as if it were new, allowing a reasonable break-in interval before changing the oil after a few hours.

Similar steps are recommended with units other than engines. The

LUBE LOGIC

Five tips t

Texaco "lay-away plan" protects exterior of idle equipment

Equipment that won't be needed for a while is sometimes simply parked somewhere so nobody will fall over it. Well and good, but not enough—because rust and corrosion account for almost half of what you spend on equipment maintenance. Here's a 6-step program that will keep idle equipment in cracker jack shape no matter how long it's out of use, or where it's stored. The basic ingredient is Texaco Rustproof Compound L, a remarkable product that keeps rust from starting and acts to loosen rust that's already on the equipment.

1. Before applying Texaco Rustproof Compound L, make sure all exterior surfaces are clean and fairly dry.

2. Coat all adjustment bolts and other exposed threads with Rustproof Compound to facilitate removal or adjustment.

3. At temperatures of 65° or more, Texaco Rustproof Compound L can be applied to smooth accessible surfaces by brushing.

4. At temperatures below 65°F, or for inaccessible and complicated areas, spraying is the best way. You can thin the Rustproof Compound to a sprayable consistency by adding naphtha to form a 10 to 50% solution. Add the naphtha slowly to the compound and stir vigorously so the whole batch is the same consistency.

5. Apply tags at conspicuous points on the equipment describing the rustproofing measures that have been taken.

6. Thoroughly lubricate all equipment before storage.

Starting up equipment after storage

1. In most cases it's not necessary to remove Texaco Rustproof Compound L. You should, however, remove it from surfaces that will come into contact with personnel (such as ladders, seats and handrails) and from surfaces that are heated to high temperatures when the equipment is operated.

2. Since Texaco Rustproof Compound L is *not* a lubricant, all working surfaces and lubrication fittings should be wiped clean before use, and the correct lubricant should be applied before starting up.

Thicker oil won't stop gear-case drooling

You can't fix leaking seals on a gear-case simply by switching to a heavier-grade gear lubricant, because in gear cases carrying heavy loads, the thicker oil simply increases gear-case temperature, which thins out the oil and it starts leaking again. Sometimes, however, foaming and leaking of gear-case lubricant indicates that the oil level is too high. By keeping vents open and keeping the oil at the recommended level, you prevent build-up of pressure which would cause leakage.

ent trouble with rebuilt units

hould be operated gently under light oads for the first few hours so that ll moving parts receive equal wear. After about 50 hours, the unit should e drained in order to flush out all mall metal particles.

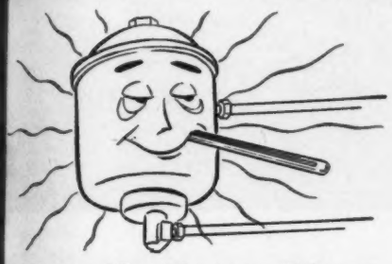
It is important to remove oil while it is still warm to ensure that all foreign material flows out freely. If the unit is equipped with a filter, this should be cleaned or replaced—depending on the type—at this time.

Track equipment crosses highways on rubber tires

When heavy equipment must cross a highway, discarded automobile tires may serve as a handy bridge. The tires distribute the load and keep the tracks from scarring the pavement.

During work on a levee protecting Salina, Kans., track equipment of J. D. Armstrong Co., Inc., Ames, Iowa—the firm responsible for most of the earthmoving—occasionally had to cross highways, and tires were used to get it across. Two rows of tires across a concrete highway in the path of a Cat D8 tractor-dozer, for instance, gave adequate protection to the roadway.

s trim maintenance costs



A filter that's working runs a temperature

l filters last so long these days it's sometimes hard to y when they were last changed. But they're so important engine performance that it's essential that you know hether they're too full to filter right. Here's a simple way find out.

A filter that's working will be as warm as the engine l. If the filter on a fully warmed-up engine remains cool the touch, it's a safe bet that it's too clogged up to let y oil through. Just to double-check, tap the filter case arply. A metallic ringing sound means the cartridge is ll in good shape. A soggy thud often means that the er is loaded. Top mileage for even the best filter is ,000 miles, never more.

Crawler treads are happier dry

There are few places where good lubrication is more important than in track-roll bearings, but make sure you don't lubricate the crawler treads themselves in a burst of enthusiasm. The pins that connect the links of crawler treads are designed to operate without lubrication, because dirt or other abrasives would act as a lapping compound in service. Result: much shorter service life for the track. Moral: if you don't want to lap your crawler link pins, don't oil them.

ow often should you lubricate wire rope?

ow much lubrication is good for wire rope and cable epends mainly on how it's used. Cables that are agged in dirt shouldn't be lubricated at all. Oil mply holds the dirt where it can work into the strands d cause rapid wear. Cables that are wound on drums uipped with clutches should be lubricated sparingly prevent fouling the clutch faces with lubricant. With er wire ropes, apply Texaco Crater A every 10 to 0 hours as necessary to avoid dryness. Be sure to an the rope before adding new lubricant.

TEXACO LUBRICATION ENGINEERS

Every month or so we'll bring you a batch of "sleepers," little angles, so easy to overlook, where big savings in money and time can be made. But month in, month out, your local Texaco Lubrication Engineer is the best source of money-saving lubrication ideas. Don't forget that "Lubrication is a major factor in cost control."

Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

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For more facts, use Request Card at page 18 and circle No. 254

Hinged braces on form sections ease prestressing

Shop-fabricated steel side forms for prestressed-concrete components have been adapted for easier handling by Precrete, Inc., Long Island City, N. Y., a large prestressed manufacturer. At least two hinged braces, attached to the outside of the form sections, allow forms to be stripped and temporarily positioned along the next casting line.

The forms stand almost vertically, making operations in a casting area more efficient. First, the forms take up less space than they would if they were laid flat on the ground. Second, the chance of damage to forms by rolling equipment is reduced. Third, oiling of the forms is made easier. Finally, the time required for positioning of the sections along the pallet liners is substantially reduced.

This contractor-built joint machine vibrates a ¼-inch-thick × 2-inch-deep asphalt-impregnated filler strip into concrete on Interstate 10 near Jacksonville, Fla., in a fast and clean operation. The 2-man crew positions the machine and pushes down on the overhead frame to force the filler into place. The holding device and overhead driving frame vibrate, displacing aggregate as the filler is placed. The men then crank the machine ahead on the forms so that they can work from the platform to hand-finish the joint area. Straightedges and a burlap drag finish the surface of the roadway.

Special rig built to

Insert joint fillers

by TONY MAVROUDIS, field editor

Two 7-yard ready-mix trucks dump concrete between the 9-inch forms for a 12-foot lane. The longitudinal joint between the lanes is formed by the insert fastened to the side form at right.

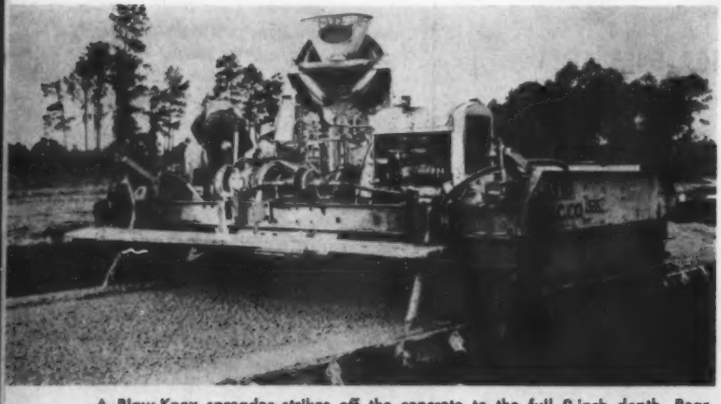
Straight, clean, and economical construction joints are produced on a 1.5-mile stretch of Interstate 10, just west of Jacksonville, Fla., by inserting asphalt-impregnated strips into the freshly placed roadway concrete. Duval Engineering & Construction Co., Jacksonville, the contractor on this $1,950,000 project inserts the ¼-inch-wide × 2-inch-deep strips with a contractor-built machine that rides on the steel paving forms.

Inserting operation

Duval positions dowel joints on 20-foot centers along the 12-foot paving width prior to paving the 9-inch concrete slab. Immediately after the finishing for the unreinforced slab the specially built machine is hand-cranked to the dowel-joint location and inserts the asphalt strip flush with the slab's surface.

The ¼ × 2-inch strip is fed through a holding device spanning the 12-foot paving lane. Two steel strips permit one of the 2-man crew to slide the asphalt strip from one end. An overhead frame, manually lowered, hydraulically drives the asphalt strip from the holding device into the concrete.

During the actual insertion, the holding device and the overhead driving frame are vibrated to ease the strip into the mix. This was found



A Blaw-Knox spreader strikes off the concrete to the full 9-inch depth. Rear-mounted vibrators consolidate concrete along the edges of the slab.

A Rex double-screed transverse finisher follows the spreader to smooth the surface of the concrete. Just behind this rig is the Rex longitudinal floating machine.

necessary in order to displace the aggregate in the concrete.

After the strip is driven flush with the slab's surface, the machine is moved ahead slightly to permit the 3-man crew to hand-finish the concrete surface. This operation is followed by a surface finishing of the concrete with four straightedges and a burlap drag.

Once the concrete slab is cured, the joint is formed by sawing out 1 inch of the asphalt filler and later, pressure-sealing the joint with a plastic filler. The sawing of the filler, rather than concrete, results in a smooth and even joint with no spalling. It also eliminates the requirement to form the joint at a specified time in order to provide controlled planes of weakness.

Paving train

Duval is using ready-mix concrete to form the 9-inch slab. A fleet of 7-yard-capacity transit-mix trucks delivers the mix to the job and, using chutes, dumps in front of a Blaw-Knox spreader. Enough concrete is dumped to obtain the full 9-inch slab thickness with a single pass by the spreader.

This lead machine is equipped with two rear-mounted vibrators, located near the forms, to provide the proper consolidation of the mix. The side forms have key inserts and tie bars welded on the inside surface in order to form the longitudinal joint between the 12-foot paving widths.

The spreader is followed by a Rex transverse finishing machine and then a Rex longitudinal floating machine to smooth the surface. The contractor-built joint machine follows to insert the asphalt filler on 20-foot centers. After the straightedges and burlap drag make a pass, Hunt white-pigmented curing compound is sprayed across the surface of the slab by a spray machine riding the forms.

Duval has about 1,800 linear feet of 9-inch forms on the job and tries to maintain forms about 500 feet ahead of the paving train. The forms are set manually and tamped by two Cleveland Form Tampers.

The final subgrade between the forms is shaped by a grader, and the excess dirt is removed by a front-end loader. The grade is then checked with a scratch board and compacted by a self-propelled pneumatic roller. Forms are stripped the following day; a Cleveland pin puller removes the form stakes. The forms are then loaded onto a truck trailer, moved ahead, and repositioned in front of the paving train.

The new route has two 24, 36, and 48-foot roadways separated by a depressed grass median strip. Ramps, 16 feet wide, are connected to the main line slab by doweled expansion joints.

Personnel

R. D. Fambrough is the superintendent, and Earl Carswell, the paving superintendent on the job for Duval Engineering. THE END

Transverse ridges formed over the surface of the slab by the double-screed finisher are smoothed out by the Rex longitudinal float. On this job, the joint fillers made it unnecessary to form joints at a specified time to provide controlled planes of weakness.

NOW! A HANCOCK ELEVATING SCRAPER FOR THE MODEL "D" LeTOURNEAU WESTINGHOUSE

Here's a combination that will move lots of dirt and move it fast! The 10E2 Hancock Elevating Scraper is designed to work with old or new models of the Le Tourneau Westinghouse "D". This 10-yard capacity scraper is 100% self-loading and has the famous Hancock positive ejection feature. It is a rugged, heavy duty machine with electrically driven elevator and hydraulic controls. Production models in the field are setting new records for moving dirt, and operators report extremely good balance which results in easy handling. Place your order now.

Place your order now with your Le Tourneau Westinghouse Dealer.

HANCOCK MANUFACTURING COMPANY

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For more facts, use Request Card at page 18 and circle No. 255

An aerial view of one of the 50-acre missile complexes being constructed for the Titan ICBM in South Dakota shows three missile silos across the foreground, a dome-shaped powerhouse in the center, with forms going into place. Excavation is being done for another dome, just opposite, that will house the control center.

Huge missile complexes under way for Titan ICBM

■ Three huge Titan missile complexes, each occupying about 50 acres of land and enclosed by earthworks requiring some 500,000 yards of material, are being built within a 35-mile radius of Rapid City, S. Dak. When the job is completed, only hatches will be visible on the South Dakota prairie.

Each subsurface complex will contain three 160-foot missile silos, adjoining propellant and equipment terminals, two giant igloo structures to house power and control equipment, two small silos for retractable antennas, and personnel tunnels.

For a typical complex, shaft excavation is carried to a depth of 160 feet. Bases of the missile silos are composed of 6 feet of concrete, reinforced by 90 tons of 2¼-inch steel to carry the more than one-million-pound weight of the Titan with its launcher and crib. The launching silo must be completed by December 31, 1961, to coincide with the operational target date of the missile.

Safety standards are being rigidly enforced. A 30-day gap exists between construction stages at each of the

Chrysler to market Perkins engines in U. S.

■ The Marine and Industrial Engine Division of Chrysler Corp., Detroit, has made an agreement with F. Perkins Ltd. of Peterborough, England, to market Perkins diesel engines in the United States and Canada.

Added to Chrysler's extensive line of gasoline engines will be the complete line of Perkins high-speed diesels—3, 4, and 6-cylinder units ranging from 25 to 130 horsepower. All Perkins engines are liquid-cooled and operate at speeds up to 4,000 rpm.

The Perkins diesels will be serviced by the nation-wide network of Chrysler M&I engine centers where a complete range of Perkins parts will be available. Personnel from the engine-center network and all field sales engineers have been brought to Detroit for a concentrated briefing on the Perkins line.

Perkins has supplied original-equipment engines for trucks manufactured by Chrysler abroad or in this country for export.

Le Roi Division names

■ Le Roi Division, Westinghouse Air Brake Co., Milwaukee, Wis., has named Edwin F. Atkinson a special representative with headquarters at Richmond, Va. He is working with distributors handling Le Roi air tools and compressors in the firm's eastern and southeastern regions.

Acme-Hamilton executive

■ James V. Carlin, Jr., has been made vice president of sales for Acme-Hamilton Mfg. Corp., Trenton, N. J. He will be responsible for sales of both the Acme Rubber and Hamilton Rubber divisions.

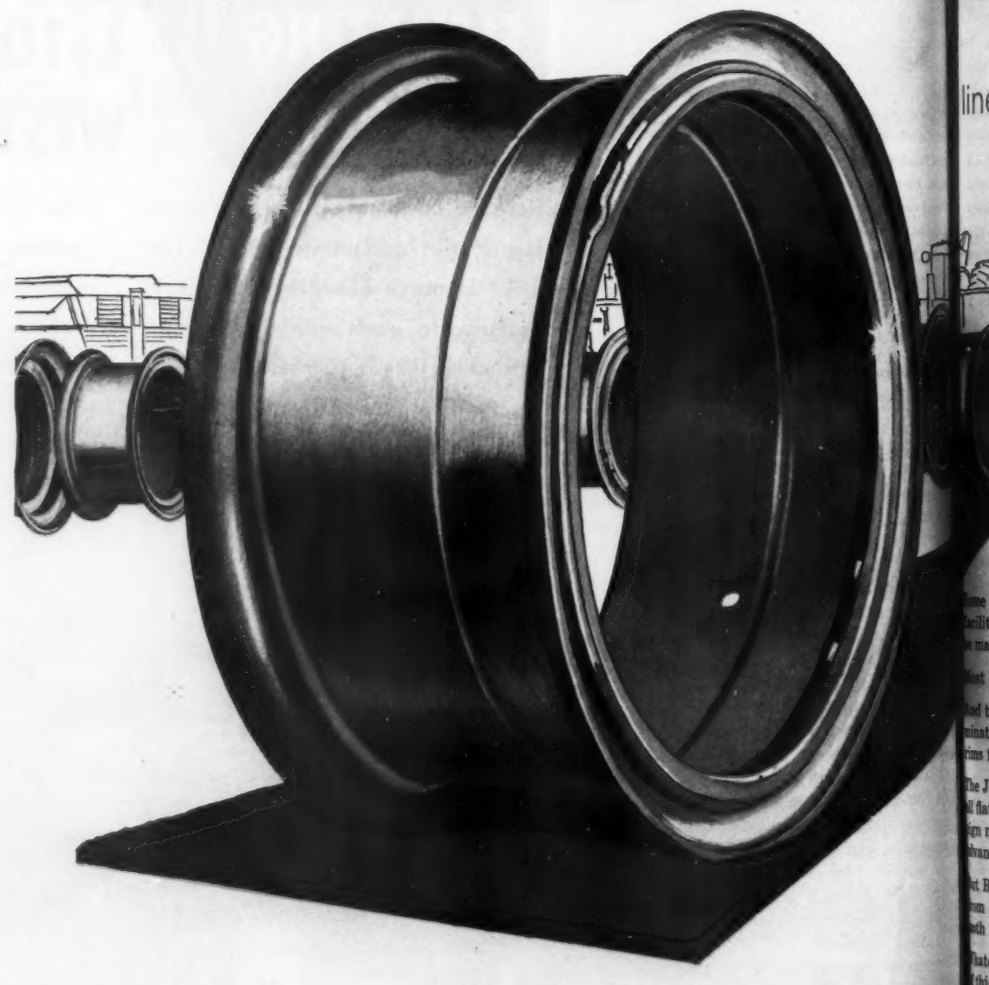
Iowa Mfg. sales post

■ Iowa Mfg. Co., Cedar Rapids, Iowa, has made Robert F. Plumb assistant sales manager. He will deal with various functions concerning domestic sales for the Cedarapids line of aggregate-producing, bituminous mixing and paving equipment.

Plumb has been serving as engineer-manager of the bituminous-equipment sales division for the company since 1955.

Presenting:

GOODYEAR'S 60



Lots of good things come from GOOD

three sites so that if a safety problem comes up at one site, it can be averted at the other two. A new safety belt, the "M-K Special," a 5,600-pound-test nylon harness used on the M-K Titan project at Lowry AFB, was in use on the job.

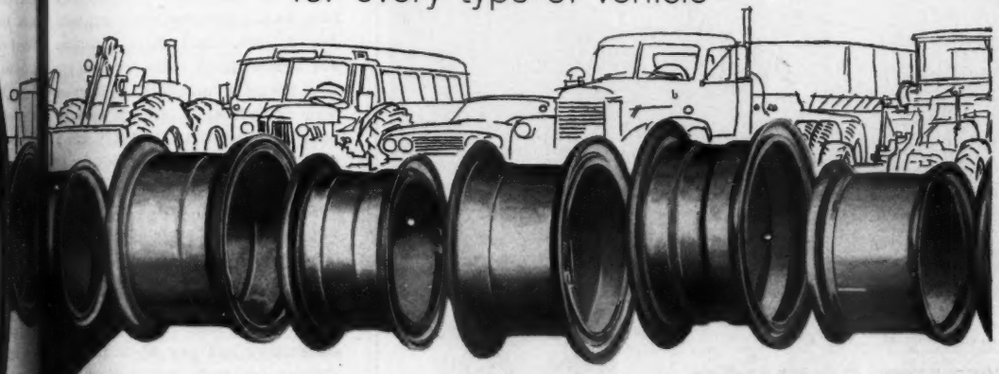
Totals for the 33-silo job include excavation, 2 million yards; concrete, 100,000 yards; steel, 35,000 tons.

The Omaha District of the U. S. Army Corps of Engineers awarded the $28.5 million contract. Those working on the job are C. H. Leavell & Co., El Paso, Texas, the supervising contractor; Scott Co. of Northern California; Morrison-Knudsen Co., Inc.; Paul Hardeman, Inc.; Johnson, Drake & Piper, Inc.; Olson Construction Co.; and F. E. Young Construction Co.

A GIANT STEEL CYLINDER is added to other completed pipeline-core members by a Yale lift truck at the Yuval Gad plant in Ashkelon, Israel. The cylinders are cores for the Jordan-Negev pipeline, a key link in Israel's national water project now under construction.

60 MILLIONTH RIM

Latest, greatest in the world's most complete line of rims, designed to provide superior performance for every type of vehicle



Some time this month, from Goodyear's huge modern facilities in Akron, will come the 60 millionth rim to be manufactured by the world's leading tire-maker.

Most likely it will be a Job-Master.

And this is appropriate, for the Job-Master is the culmination of Goodyear's long experience in building rims for every type of vehicle.

The Job-Master is the first rim designed to fit properly all flat-bead tires—the first designed to seal out all foreign matter. In fact, Job-Master represents the biggest advance in "over-the-road" rim design in over 15 years.

But Rim No. 60,000,000 could just as well be anything from a lightweight rim for pick-up trucks to a mammoth 45" size for giant earthmovers.

Whatever size and type this historic rim happens to be, of this you can be sure: it will embody every advantage that Goodyear engineering skill can give it—and that's considerable. For example:

Longer rim life—because they're job-designed by experts.

Truer running performance—virtual elimination of "wobble" and "hop"—lateral and radial run-out.

Longer uninterrupted service—fewer road delays, more miles, lower cost-per-mile.

Bond-A-Coat Finish—a Goodyear exclusive, providing lasting protection against rust and corrosion.

Our industry leadership, experience and knowledge gained in building 60 million rims qualifies us to solve your rim problems. Write the Goodyear Rim Sales Engineer. Address: Goodyear, Metal Products Division, Akron 16, Ohio, or get in touch with your local Goodyear Rim Distributor.

GOODYEAR

More tons are carried on Goodyear Rims than on any other kind

Job-Master—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

For more facts, use Request Card at page 18 and circle No. 256

Clark Equipment has new division

■ Clark Equipment Co., Buchanan, Mich., has established a new division with responsibility for exploring and evaluating areas for possible expansion by the company.

Called the Clark Development Division, the group will investigate expansion of the company's existing lines, as well as expansion in new areas.

Key personnel in the new division includes Cyril B. Rogers, manager; Glen Johnson, marketing manager; and Richard Jung, chief engineer. Rogers has been chief engineer of the special-development section of the Industrial Truck Division. Johnson has been on the sales staff of the same division, and Jung has been chief engineer of hand trucks produced by the division. All three will work from division headquarters in Battle Creek, Mich.

Asphalt research program costs $4 million in 1960

■ More than $4 million will be spent on product research in 1960 by refiners of petroleum asphalts. The combined programs of member companies of The Asphalt Institute, College Park, Md., will employ 216 full-time researchers, engineers, and technicians.

The work will range from basic investigations into the molecular structure of asphalts all the way to improved applications of the product.

Asphalt and road oil sales for 1959 reportedly climbed to a record high of 20.9 million short tons, an increase of nearly 1.6 million tons over the 1958 figure. Paving accounted for the sale of more than 15.7 million tons of asphalt last year; roofing and waterproofing asphalts used in 1959 amounted to some 3.3 million tons.

Parker sales appointment

■ William E. Ballantyne has been made assistant sales manager of Parker Hydraulics Division, Parker-Hannifin Corp., Cleveland, Ohio, maker of directional control valves and pumps for mobile equipment, accumulators, check valves, and relief valves.

Labor Review

Union scale set for Northwest surveyors at Seattle conference

The American Federation of Technical Engineers Local 17, representing surveyors on construction projects in the Northwest, announced a new set of rates and working conditions, which it expects contractors to meet.

A conference in Seattle, attended by delegates working at Rocky Reach Dam, Wanapum Dam, Ice Harbor Dam, Hanford Works, Hanson Dam, and Mayfield Dam, asserted Local 17's jurisdiction over the use of any surveying instruments, including all optical instruments, on heavy construction projects in the area.

A travel allowance scale also was set up to provide compensation based on the distance of a project from the nearest Central Labor Council office having jurisdiction over the project. Payment is to be $1 daily within 25 miles, $3 for 25 to 35 miles, $4.50 for more than 35 miles, plus tolls.

Two major settlements swung by Rhode Island AGC with carpenters, engineers

The Associated General Contractors' Rhode Island Chapter wrapped up two major settlements—a three-year agreement with the carpenters and a two-year agreement with the operating engineers.

Effective June 5, the carpenters' hourly rate went up 15 cents to $3.40. Another 15-cent increase is due in June, 1961, and a final 12½-cent raise becomes effective in June, 19[illegible]. A 10-cent hourly health-welfare pay[illegible]ment remains unchanged. The agre[illegible]ment expires May 31, 1963.

The operating engineers' agre[illegible]ment, averting a strike, provides wh[illegible] the union claims is the highest sca[illegible] in New England, and some rates th[illegible] are among the highest in the country. Engineers on heavy construction projects received a 20-cent increase effective June 20, an additional [illegible] cents next year, and a 15-cent hourly contribution toward a new pension fund. Engineers on building projects received 5 cents less in the initial raise.

AGC's earlier agreements, both for four years, were signed with the laborers and teamsters.

Denver iron workers receive 52½-cent package over two years

Iron Workers' Local 24 settled with Denver contractors on a two-year package which will increase wages a total of 50 cents an hour, increase health-welfare contributions, and revamp travel and subsistence pay.

The contract, according to a spokesman for the union, backdates the first 25-cents-an-hour increase to April 11, 1960, establishing an hourly wage rate of $3.66. Contractors continued to contribute 7½ cents an hour to a health-welfare fund until July 1, 1960, when the contribution was boosted to 10 cents per hour per man. Wages go up another 5 cents an hour on October 1, 1960; 10 cents an hour more on April 1, 1961; and a final dime on October 1, 1961.

Travel and subsistence pay provisions are revised, with iron workers who had received an hour's extra pay per day when working 15 to 50 miles from the union hall, now to get a flat $3.50 a day. The first 15 miles remains a free zone. Beyond 50 miles, contractors will pay $7 a day subsistence for each day worked. The expired agreement called for $5 a day.

10-week strike ends in Kansas City; welfare funds set up

Work resumed on June 20 on Kansas City projects shut down in early April when a number of trades struck members of the Builders Association of Kansas City. The long work stoppage was ended when agreement was reached with the iron workers and laborers on five-year contracts; however, a spokesman for the employer group says contracts still were to be negotiated with the operating engineers, bricklayers, lathers, and plasterers. Settlements were reached earlier with other crafts.

The new contracts run for five years and provide annual wage increases of 12½ cents an hour for the first four years and 15 cents an hour for the final year. It is agreed, however, that 10 cents of the fourth-year increase will be diverted to new health and welfare programs—an innovation in Kansas City agreements.

How to get maximum service from your boom pendants

The next time you purchase cranes or power shovels, or re-rig existing equipment, be sure to specify Bethlehem Boom Pendants with swaged fittings.

Research clearly proves that these pendants are superior to pendants with spliced, socketed, or sleeve-type fittings. These superior pendants make ideal boom supports because they are engineered to absorb punishment caused by shock and vibration. They are made of Bethanized rope, which means that each wire is zinc-coated electrolytically, then drawn to size, to provide maximum resistance to fatigue and corrosion.

Maintenance costs are reduced, for there is no need to constantly re-lubricate. Bethlehem Boom Pendants can also be fabricated of uncoated wire.

Bethlehem Boom Pendants are furnished in diameters, lengths, and styles to meet virtually every construction requirement. If you want full details, just call the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, Bethlehem, Pa. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 257

A health-welfare program also is provided for in the heavy constructors' settlement with the laborers. The laborers' and the teamsters' new agreements run for four years, with annual wage increases of 12½ cents an hour. The laborers' welfare fund will be started in the third year, when 10 cents will be deducted from the 12½-cent increase to finance the program. All of the above agreements carry agency shop clauses for work in Kansas, where the union shop is outlawed.

The Eastern Kansas Contractors Association and Operating Engineers Local 101 also are reported to have come to terms. Their new contract runs for four years, raising wages a total 45 cents on highway work, and 50 cents on heavy construction work. Workmen in both categories get 15-cent raises this year and 10-cent increases next year. Rates for highway work will go up 10 cents more in each of the last two years, while workmen on other jobs will get 12½ cents an hour in each of the final years. Here, too, an agency shop has been established.

State mediators attempt to end stalemate in Buffalo, N.Y., talks

New York State mediators appeared to be making some progress toward ending a strike that has crippled the Buffalo construction industry since June 1.

A specialty local of the Buffalo Council of Carpenters, major craft on strike, has signed a new agreement. But the effect of the settlement —between Local 1701 and the Floor Covering Employers Association—on the major negotiations was discounted. The local, representing an insignificant segment of the craft, agreed to a 4-year contract raising the previous $3.48½ hourly rate 10 cents immediately; 20 cents next July 1; 20 cents July 1, 1962; and 25 cents July 1, 1963.

Carpenter locals negotiating with the Construction Industry Employers Association have rejected a 55-cent 3-year offer, as have striking bricklayers, cement masons, iron workers, and laborers.

New political organization to be called DRIVE is launched by teamsters

The executive board of the Teamsters Union is preparing to make its influence felt in the Presidential and Congressional races this coming November by establishing a legislative, educational, and political organization. The new group is to be known as DRIVE, meaning Committee for Democratic, Republican, Independent Voter Education. Here is the way it works.

The organization is set up with its own constitution and bylaws, and is established like other union political organizations as a legal entity apart from the union. It may become one of the strongest of its kind in terms of funds that are available in its treasury.

It allows anyone to join as a voluntary member, and its constitution makes a pitch for family contributions from members of the Teamsters Union.

Administration of DRIVE will be by a national committee made up of the Teamsters' executive board members, headed by the union's president, James R. Hoffa.

For more facts, use Request Card at page 18 and circle No. 258

A DERRICK BOAT working for Dravo Corp., Pittsburgh, Pa., lowers steel-sheet piling into position for a pier cofferdam for a new bridge across the Kanawha River to link Nitro and St. Albans, W. Va. The bridge will be part of Interstate 64.

SPECIAL REPORT TO CATERPILLAR OWNERS:

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Parts you can trust ... cost less per hour

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BONDED BUY PARTS ASSEMBLIES

PARTS BONDED BUY ASSEMBLY

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Know All Men by these Presents,

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in the sum of not exceeding the lesser of FIVE THOUSAND DOLLARS ($5,000.00) or Seller's price, with respect to each parts assembly described below, for the payment of which Seller hereby binds itself, its successors and assigns by these presents.

The Condition of this Obligation is such that Whereas Seller has sold to Buyer the below-described parts assembly or assemblies originally manufactured by Caterpillar Tractor Co. and reconditioned in accordance with practices recommended by Caterpillar Tractor Co.:

DESCRIPTION	PART NUMBER	SERIAL NUMBER	SALE PRICE

And Whereas Seller guarantees each said parts assembly against unsatisfactory performance due to defective material or workmanship for _____ days after the date of sale shown below (herein referred to as the guarantee period), the obligation under this guarantee being only to repair or replace, as Seller may elect, any said assembly which proves defective in material or workmanship under conditions of normal use during the guarantee period at Seller's expense (including cost of all necessary materials and labor) up to a maximum of the lesser of Five Thousand Dollars ($5,000.00) or Seller's price, with respect to each said assembly, except that the cost, if any, of transporting each said assembly from and to Seller's place of business shall be paid by the Buyer.

Now, Therefore, if Seller, its successors and assigns shall in all respects well and truly perform the obligation under the guarantee recited above, then this obligation shall be void; otherwise to remain in full force and effect.

THE ABOVE GUARANTEE IS VOID, AND SELLER SHALL BE UNDER NO OBLIGATION THEREUNDER, IF CLAIM IS NOT MADE TO THE SELLER WITHIN THREE (3) DAYS AFTER DISCOVERY OF THE DEFECT UPON WHICH THE CLAIM IS BASED.

You can have complete confidence in any Parts Assembly Exchange or Rebuilt Unit carrying the dealer's new Bonded Buy label. You'll receive a Guarantee Bond, backed by the Lumbermens Mutual Casualty Company of Chicago, Illinois, giving the guarantee conditions agreed upon at time of sale. This is further evidence that a Caterpillar Parts Exchange or Rebuilt Assembly is in first-class condition—another way of expressing the careful and thorough workmanship that goes into each of these reconditioned assemblies.

The cost? It compares favorably with the cost of doing the reconditioning work yourself. Often less ... because of the availability of special equipment and servicemen's skills in the dealer's shop. Your final net cost is based on parts and labor necessary to put your worn assembly in A-1 condition—same as the exchange unit you receive.

Here's why Cat Reconditioned Assemblies save you money. You trade down time for more *go* time. Simply:

1. **Call your Caterpillar Dealer and arrange for the Parts Assembly you need.**
2. **Remove your worn assembly and install the reconditioned unit.**
3. **Put your machine back to work immediately and return the worn unit to your dealer.**

Any way you look at it, a Bonded Buy Parts Assembly is a good deal. You get a dependable unit ... guaranteed in writing. The cost is approximately the same had you done the work yourself. Time saved can be converted to cash because your machine's working and earning. Contact your Caterpillar Dealer today. Find out what assemblies he stocks (new items are being added daily).

SERVICE TIP: Never allow your present machine components to become worn to the point where reconditioning is impossible.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

New framing syst

Erection of the steel or aluminum Modu-Frame system, which combines window wall and frame for one-story structures and saves up to 25 per cent of the cost of wall and roof construction, starts with limestone blocks being carefully aligned and leveled to form the base for the wall frames. The 4-foot lengths are set in mortar atop the foundation wall.

A new framing system for one-story buildings cuts erection time in half and results in savings of up to 25 per cent in the cost of the roof and wall structure.

Basically, the system combines window wall and frame to make one integrated structure. The key component of the system is a 9.5 × 4-foot steel (or aluminum) framing unit. When bolted together, the framing units serve as both window wall and column. Standard 12-inch I-beams make the span between the walls.

The advantages of the framing system lie in its simplicity and ease of erection. These features bring the cost of enclosing and framing an area down to about $1.50 per square foot. Specifically, this is the price of purchasing and erecting the beams and unglazed steel wall frames.

Developed by Glenn Chell of Chell & Anderson, Inc., Chicago building contractors, and Brooks Buderus, architect of Park Ridge, Ill., the Modu-Frame system is adaptable to many types of one-story buildings. The system can be used on schools, motels and offices. The framing units and accessories (not beams) are manufactured by Functional Structures, Des Plaines, Ill.—a subsidiary of Chell & Anderson. Since the founding of the company in January, 1959, about a dozen buildings have been successfully built using the system.

Method used for school

One of the latest buildings to take advantage of the economical framing method is the Upper Grade Eleme-

Two men swiftly set the 9.5 × 4-foot frames in place. Lower corners of the frame are bolted to base clips. Flange extensions are later encased in the ground slab. A neoprene gasket seals the vertical joint; adjacent frames are screwed together with blind nut bolts. The Case Terra-Lift, background, distributes frames and erects the 12-inch I-beams that span between walls.

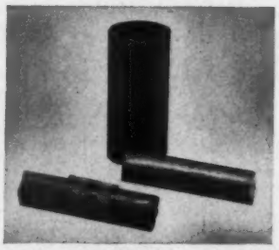
Temporary bracing holds frames while I-beams are set. This I-beam, a short cantilever to support the roof overhang, is guided into place to match the four holes in the two adjacent wall frames. A crescent wrench is used to tighten bolts. Framing units are made by Functional Structures, Des Plaines, Ill., a subsidiary of Chell & Anderson, Inc., Chicago contractors.

WHEN BLASTING CONTROL REALLY COUNTS...

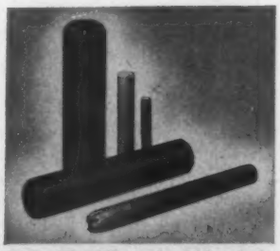
WHICH

EXPLOSIVE

ATLAS PELLETS, a new form of ammonium nitrate, have both the density and sensitivity for efficient AN-oil blasting.



GIANT "75" PRIMERS have the wallop for complete detonation of both field mixed and plant mixed blasting agents.



GIANT GELATINS are for high velocity shattering action. Advantageous for wet work and hard, tight shooting.

ROCKMASTER® electric blasting caps achieve the staggered action so important for better breakage and control.

When you use the right combination, all your equipment moves in sooner... works faster... produces more.

In the center of Stroudsburg, Pa., a cut [illegible] long and 85 feet deep had to be blasted out of mountain-side for construction of the new Route 611. Some residences were as close as [illegible] from the construction site. The job called for controlled blasting and virtually no vibration.

Working with an Atlas Technical Representative, contractor, J. H. Beers, Inc., studied the rock strata, and the surrounding area. Using advanced blasting technology to assure absolute control, they planned their blasting methods.

Which explosive for controlled blasting? It depends on your rock strata and conditions. In this case they used Gianite pre-mixed ammonium nitrate blasting agent, detonated with Rockmaster millisecond delay electric blasting caps. The [illegible] holes were spaced 7 feet apart, and were drilled an average depth of 10 feet with 6 feet of stemming. In the sequence of photos, notice the "ripping" action resulting from the use of the full Rockmaster charge. There is no flying rock or noticeable vibration. The explosives energy is used only to uniformly break the rock and leave it in place for easy, efficient digging.

This blast is a dramatic example of the [illegible] necessity for real controlled blasting. But [illegible] control should not be a sometimes practice. Controlled explosives energy not only breaks rock uniformly and thoroughly, but also means more economical operation. When you select the right combination of explosives, blasting agents, and blasting techniques, all your equipment moves in sooner, works faster, produces more. Helping you select the right combination is the job of your Atlas Representative. Backed by the complete Atlas line (including all forms of ammonium nitrate), he can help you get maximum control on every shot.

Our blasting cost chart, slide rules, and technical literature are designed to help you achieve maximum control and determine your lowest true blasting cost. Ask your Atlas Representative about them—or write directly to:

ATLAS POWDER COMPANY
Explosives Division, Wilmington 99, [illegible]

s erection costs

by BILL ALLEN, field editor

tary School in Prospect Heights—a suburb northwest of Chicago. Perkins & Will, architects of Chicago, designed the low-cost building. Chell & Anderson is the general contractor.

The 233 × 69-foot classroom wing uses the Modu-Frame system, while the adjoining 87 × 68-foot gymnasium is framed with conventional steel columns and beams. In the classroom wing, 12-inch I-beams span the 28 feet between the outside wall and a central corridor wall.

The long exterior walls are made up of the 9.5 × 4-foot frames. The corridor walls are made up of 4 × 4-inch steel box columns (to support the beams) and an enclosing masonry partition. A combination of block and brick forms the two exterior end walls of the classroom wing.

The steps in erection are simple and fast. First, 4-foot lengths of cut limestone are laid in mortar on top of the foundation wall. The stones are carefully aligned and leveled, for they form the base on which the framing units rest.

Next the frames are set in place with their ends resting on dowel-like clips. The steel base clips serve to hold the lower corners of the frames together, and also to tie down the wall to the slab floor. The upper part of a clip is bolted to the frame. The lower part is encased in the concrete of the ground slab—which is placed after the wall is up.

Two men swiftly set the frames in position. The vertical side members are bolted together with blind nut bolts. A neoprene gasket between the two box steel members guarantees protection from moisture.

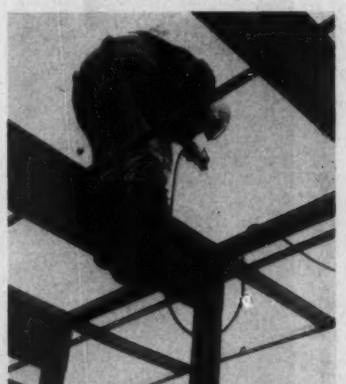
Beams are set in place

With the walls held up by temporary bracing, a high-reach forklift sets the 12-inch beams in place. One end of each beam is bolted to the tops of two adjacent frames. The other end of the beam is bolted to a corridor column. In its final position, the top flange of the beam is flush with the top of the supporting steel.

Bulb tees on 32-inch centers are then spot-welded to the beam tops. These receive 2-inch-thick slabs of Insulrock. The material—a compressed mixture of excelsior and cement—serves as both the insulator and the deck. It is covered with a built-up roof.

The 4-foot overhang on the roof is supported by double bulb tees welded to the beam tops. On other buildings, the overhang has been supported by short I-beams bolted through the wall frames to the main beams.

To complete the exterior walls, glaziers set plate glass in the upper 6.5 × 4-foot frame of the window wall. The lower 3 × 4-foot frame receives Haskelite panels. These are a laminate of Styrofoam, Transite, and plastics. Doors are hinged directly to special frames in the wall. THE END

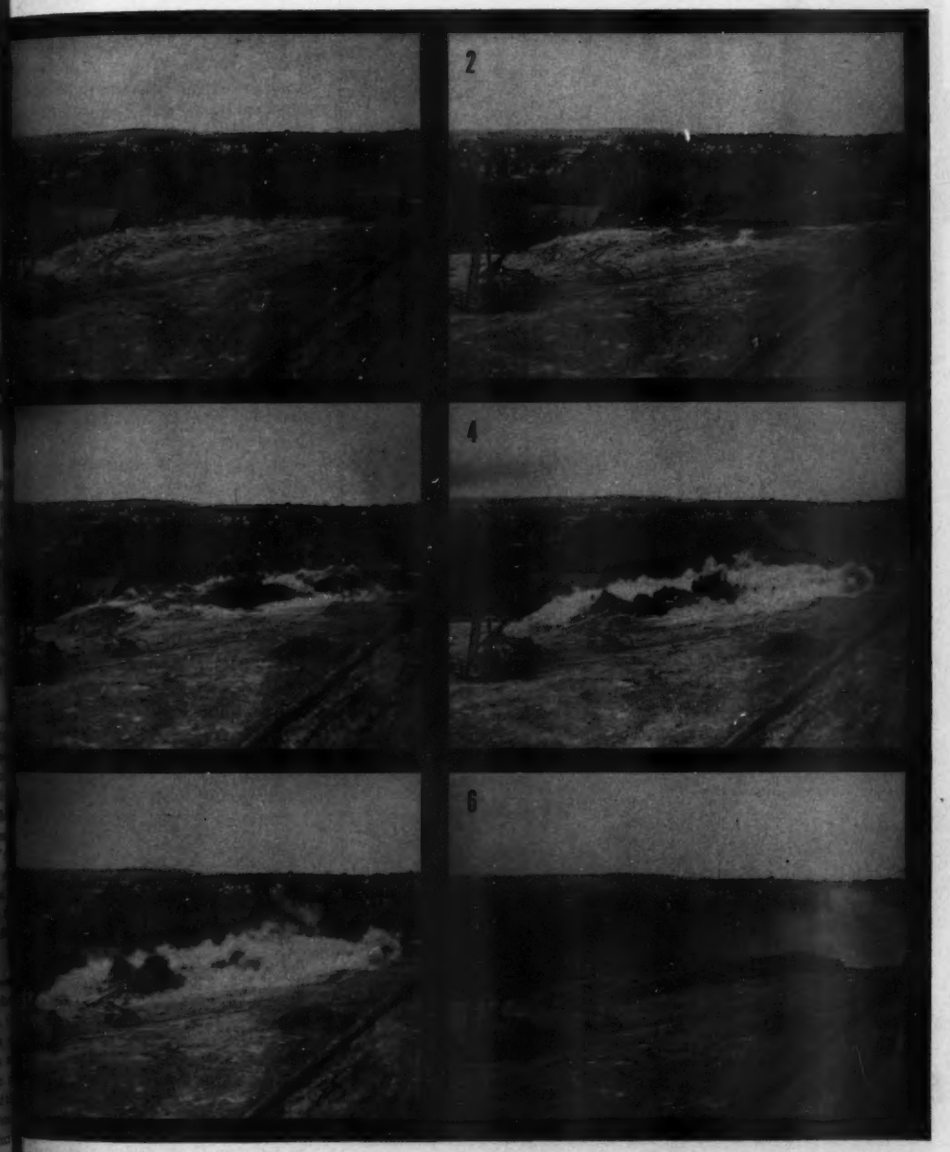


Double bulb tees are welded to beam tops for the 4-foot roof overhang of one of the buildings using the framing method. Insulrock covered with a built-up roofing will rest on the tees. The cost of enclosing and framing, per square foot, comes to about $1.50.

Lincoln opens branch in Georgia

■ A new branch office and warehouse has been established at 1845 Marietta Blvd. N. W., Atlanta, Ga., by Lincoln Engineering Co., St. Louis. The branch operation will be directed by J. P. O'Donnell.

In addition to providing warehouse facilities for Lincoln lubrication equipment, air compressors, and other products, the branch will serve the states of Georgia, Florida, the Carolinas, Tennessee, Mississippi, Virginia, and part of Louisiana.



OUDSBURG, PA. BY-PASS ON U.S. RT. 611 • CONTRACTOR: J. H. BEERS, INC., BANGOR, PA.

master® millisecond delay electric blasting caps detonate ... pre-mixed ammonium nitrate blasting agent in this ...lled shot. Explosives force breaks rock uniformly and thoroughly for easy digging. In-place blasting eliminates rock throw in congested areas. You'll get safer blasting . . . fewer complaints from near-by neighbors.

ATLAS EXPLOSIVES

For more facts, use Request Card at page 18 and circle No. 259

Fabricated timber forming is being used for the piers, which have 48 anchor bars, 41 feet long and 1⅛ inches in diameter, embedded in the concrete to hold

trunnion anchorages. Each bar is stressed to 50 tons, above, by a Stressteel 100-ton center-hole jack powered by a Blackhawk pump.

Floating rig and three gantries handle forming, concrete work for

Three-stage job o Ohio River dam

Contractors & Engineers staff article

Construction of the $13 million, 315-foot dam across the Ohio Ri at Stratton, Ohio, for the U. S. Ar Corps of Engineers' New Cumberl Lock and Dam project shows ingenious techniques.

Dravo Corp., Pittsburgh, Pa., co tractor on the 11-gate structure, using a 3-stage schedule to compl the dam by the spring of 1961. Of t 110-foot-long tainter gates, betwe the twelve 115-foot-high piers, six a nonsubmergible; the five submergib ones are among the largest ever a sembled.

The first stage is being handled b side a cofferdam built out into th river from the 110×1,200-foot lock This cofferdam will enclose five pier (No. 1 through No. 5) and four gat positions (No. 1 through No. 4).

The second-stage cofferdam will b extended into the river from the op posite shore to enclose five piers (No. 8 through No. 12) and four gate po sitions (No. 8 through No. 11).

The last-stage cofferdam will be practically in midstream and will en close two piers (No. 6 and No. 7) and three gate positions (No. 5, No. 6, and No. 7). The twelve piers will be on 120-foot centers except for the end bays, which will be 115 feet center to center.

The cofferdam in stage 1 will be pulled, after completion of the gate and pier positions, and the sheeting used to drive the stage 2 cofferdam. After completion of this stage, the cofferdam will be pulled and the stage 3 cofferdam built. During the construction of stage 2, the 1,200-foot-long lock chamber and the stage 3 area will be used for navigation. For this reason, the emergency dam sill in the lock was left 8 feet 4 inches below its design elevation.

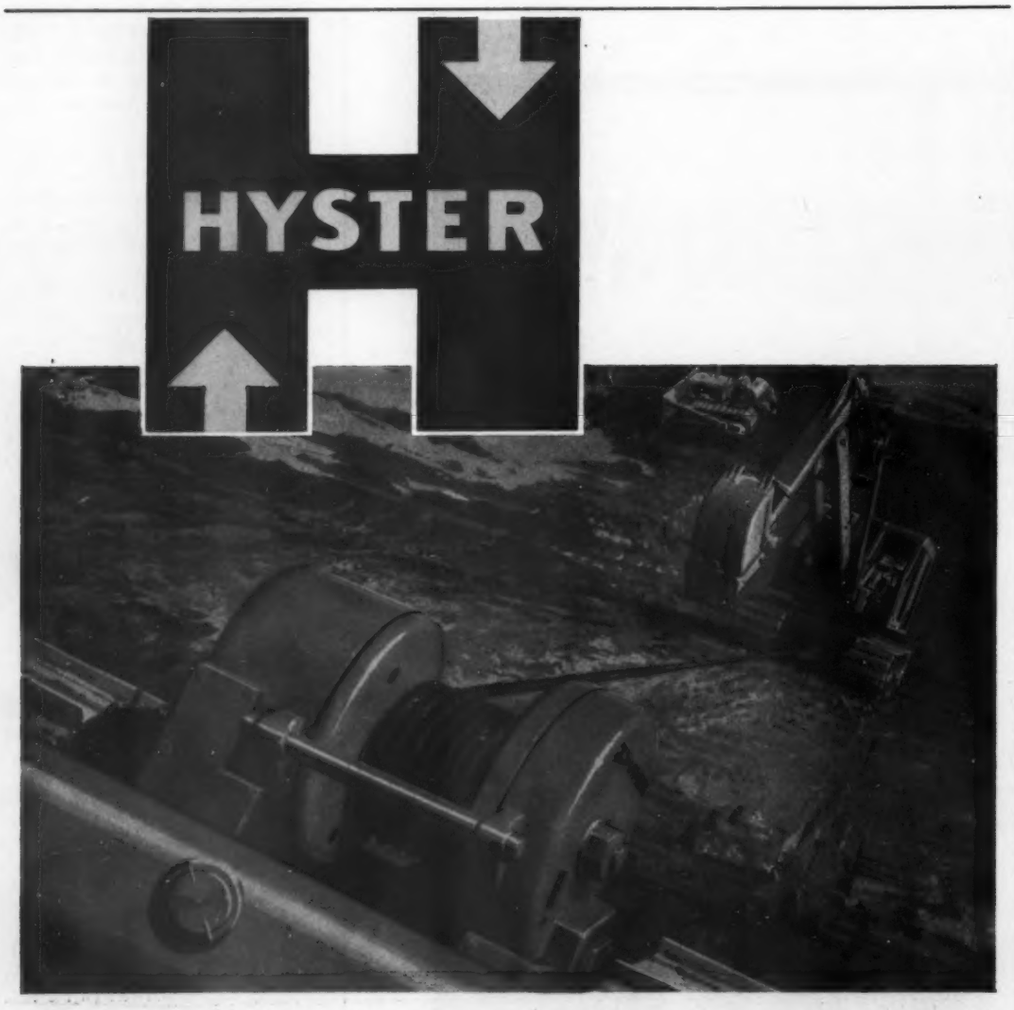
During the construction of stage 3, the completed gate positions of stages 1 and 2 will be used to control the pool elevation, and the lock will be used for navigation. During this phase, the emergency dam sill will be built up to its design elevation.

Use three gantries

Dravo is using three rail-mounted gantry cranes to handle all the lifts and pours within the cofferdam. These include two American R-20 gantries, each with a 50-ton capacity, and a 35-ton Dravo-built gantry.

One of the American gantry cranes

(Continued on page 22)



Winch Power for tough jobs—

HYSTER® has it!

Rugged, reliable winch power gives contractors "job insurance" that helps keep contracts on schedule—equipment rescue and assistance, moving heavy material, pioneer work.

Hyster winches are engineered for Caterpillar-built tractors. These high performance standards make Hyster winches your best buy. Ask your Caterpillar-Hyster dealer for information on the winch for your job.

Cat and Caterpillar are registered trademarks of Caterpillar Tractor Co.

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INDUSTRIAL TRUCK DIVISION—Lift trucks, mobile cranes, straddle carriers
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Factories: Portland, Oregon (Home Office) • Danville, Ill. • Peoria, Ill. • Kewanee, Ill. • Nijmegen, The Netherlands • Glasgow, Scotland • Sao Paulo, Brazil • Sydney, Australia (Licensee)

HYSTER COMPANY
TRACTOR EQUIPMENT DIVISION
P. O. Box 328 • Peoria, Illinois

For more facts, use Request Card at page 18 and circle No. 260

B.F.Goodrich helps change the face of a river

40 TONS OF CONCRETE ride to the bottom of Barkley Lock on B.F.Goodrich Rock Service tires. These gigantic tires (over 6 feet high) are built with B.F.Goodrich Flex-Rite Nylon cords that withstand double the impact of ordinary materials, resist heat blowouts and flex breaks. The new B.F.Goodrich Cut Protected tread compound guards against the kind of severe rock cuts and chipping found on such projects as Barkley Lock.

Hundreds of B.F.Goodrich tires—and other products—speed development of Cumberland River Basin

TWENTY-FOUR miles east of Paducah, Kentucky, they're changing the face of the Cumberland River. Here Barkley Dam will rise to a height of 155 feet, forming 62,000-acre Lake Barkley—key units in the development of the Cumberland River Basin.

This $182-million project (including construction of a lock, power plant and canal) will provide flood control, improve navigation and produce 600-million kilowatt-hours of energy a year. The completed lock will have a chamber 110′ x 800′ and a lift of 52′ to 57′. Five outmoded locks will be eliminated.

On the job: Tecon Corporation, general contractors of Dallas, Texas, who have chosen B.F.Goodrich tires, industrial products, protective clothing and footwear 100%. BFG Special Contractor's Representatives work hand-in-glove with Tecon on all phases of Barkley Construction.

This B.F.Goodrich report continues ▶

For more facts, use Request Card at page 18 and circle No. 261

Wherever you look at Barkley Dam you'll see B.F.Goodrich tires on the job

HELPING Tecon Corporation meet the challenges of the $182-million Barkley Dam project are a corps of B.F.Goodrich on-the-scene specialists and scores of different B.F.Goodrich products.

Giant BFG Rock Service tires haul concrete and rock. Rock Logger tires deliver fly ash. B.F.Goodrich All-Purpose tires support a "cement hog." Traction Express and Power Express tires bring in supplies. Power Grader and Universal tires move earth.

This is only the beginning. You'll find B.F.Goodrich hose delivering air, water, even dry cement. BFG V-belts drive pumps, crushers and vibrator screens. Conveyor belts carry sand and aggregate. And the 700 Tecon men on the project wear B.F.Goodrich protective clothing and footwear.

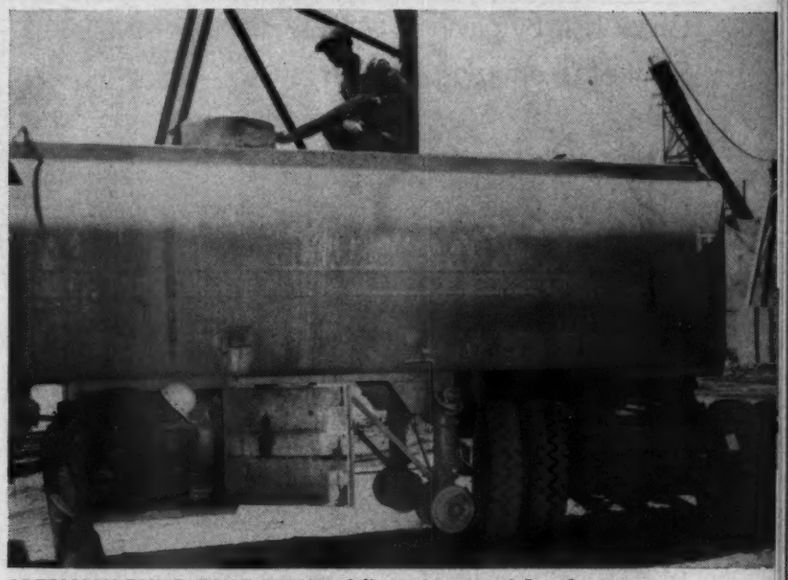
To keep the whole job humming, B.F.Goodrich provides special maintenance and service facilities, all part of the new B.F.Goodrich Unified Contractor Program. If *you* want to cut the cost of doing business, it will pay you to talk to B.F.Goodrich. Your Smileage dealer is listed in the Yellow Pages. Or write *The B.F.Goodrich Company, Akron 18, Ohio.*

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

B.F.Goodrich Smileage!

AT BARKLEY LOCK, workman rough up concrete surface for new pour. BFG hose carries air and water under high pressure. Yellow rainsuits and footwear protect men. B.F.Goodrich Unified Contractor Program provides Tecon with everything from tires to boots to belts.

CONSTANT TIRE INSPECTION by B.F.Goodrich on-the-job service men avoids delays, lowers operating costs. Servicemobile is equipped with all the latest power tools. Complete stock in B.F.Goodrich Tire Service Building (built for this project) includes BFG batteries used in all Tecon motorized equipment.



SPECIALLY BUILT TANK TRUCK delivers 30 tons of fly ash. Tecon Corp. chose rugged B.F.Goodrich Rock Logger tires because the extra-thick tread defies rock cuts, gives positive traction in forward or reverse. 125 pieces of equipment work on Barkley Dam which will have an overall length of 10,020 feet.

24 HOURS A DAY, 6 DAYS A WEEK, trucks haul tons of rock out of Barkley Dam excavation. Haul roads are steep and strewn with abrasive rock. Yet B.F.Goodrich Rock Service tires are so rugged that many actually can be retreaded up to 3 times on this operation. Note BFG Servicemobile, at work as usual.

B. F. GOODRICH CONVEYOR BELTS AND HOSE arrive at Barkley Dam on tractor-trailer equipped with Power Express and Traction Express tires. (Users call the Traction Express the "100,000-mile tire.")

B. F. GOODRICH ALL-PURPOSE TIRES (as at home in the rough as on the highway) give mobility to "cement hog" that carries dry cement to batch plant. BFG contractor's program helps Tecon simplify purchasing, eliminate confusion, cut equipment and operating costs.

OFF-THE-ROAD TIRES BY B.F.Goodrich

For more facts, use Request Card at page 18 and circle No. 261

The American gantry riding tracks along the downstream face of the dam places most of the concrete with its 140-foot boom. Pier forms are fabricated from timber; lifts are a maximum of 5 feet near the base, 10 feet in tapered sections.

For more facts on Curtiss-Wright ad on insert, use Request Card at page 18 and circle No. 263

Some 50 yards of concrete is turned out hourly by this floating batch plant, which works just opposite the American gantry. It has two Smith tilt-type mixers. The 3-compartment aggregate bin is charged by a barge-mounted crane.

Chalk talk by paving specialist "Bob" Snyder on Flintcrete—
Flintkote's amazing new polysulfide/epoxy bonding compound...

"It's a fact! New Flintcrete* lets you do concrete patching never before possible."

"The secret's in Flintcrete's bonding power. It can bond concrete to concrete in a 'weld' up to 12 times stronger than concrete itself.

"This extremely high bonding strength really pays off when you're preparing existing concrete surfaces for repair. It's not necessary to remove the slab; only the unsound area need be cut away. And be certain you use a quality compound—the right one for the job at hand."

Flintcrete can be used for a wide range of other jobs too:

- bonding overlays to existing concrete surface
- bonding precast materials, markers, refractory brick
- skid-proofing pavements • surface sealing

We'll put you in touch with a qualified distributor or one of our Flintkote paving products representatives. He knows our full line and can help you.

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FLINTKOTE

Manufacturer of diversified products for home and industry.

Send today for complete technical literature giving grades available, application techniques and uses. Write: **The Flintkote Company, Paving Products Section, P. O. Box 157, Whippany, New Jersey**

For more facts, use Request Card at page 18 and circle No. 262

(*Continued from page 18*)

rides on rails mounted on a concrete slab approximately 3 to 5 feet thick that was placed in lieu of derrick stone. This concrete slab is later broken up by blasting to simulate the derrick stone. The slab runs along the entire length of the downstream face of the dam.

The two remaining revolving cranes ride on tracks supported atop the upstream cofferdam cells. These two handle the positioning of forms and reinforcing while the downstream gantry, with its 140-foot boom, handles most of the concrete. The American revolving crane, riding on top of the 55-foot-diameter upstream cells, uses a pair of steel-track platforms that permit traveling at right angles to the gantry rails. These inverted L-shaped platforms butt up against the crane's wheel tracks to permit this change in travel direction. By riding the gantry onto these platforms, Dravo uses only one revolving crane to handle the heavy lifts of the gate sections being delivered by barge.

Concrete placed

Over 170,000 cubic yards of concrete for the dam is being turned out at an average rate of 50 yards per hour from a floating batch plant spotted along the downstream side of the downstream cofferdam. The plant is equipped with the two Smith 2-yard tilting-type mixers and a Hardy automatic weigh-control scale system for batching the aggregate and cement.

A crane, mounted at the rear of the barge, charges the aggregate bin with stone and sand delivered by material barges. Cement, also delivered by enclosed barges, is transferred to the cement compartment by a pump.

The downstream American gantry places the concrete in the Blaw-Knox cantilever forms with a 2-yard bucket. During concrete operations, the plant moves along the cofferdam opposite the gantry.

All the mass concrete, placed in maximum 5-foot lifts and cured by water for 14 days, is generally found in the 85-foot-high spillway sections of the dam.

Above the spillway crest are the 10-foot-wide piers, which rise about

(*Continued on page 24*)

NOW-430 HORSES UNDER THE HOOD CURTISS-WRIGHT CW-226

26 cu. yds. struck–36 cu. yds. heaped

SOUTH BEND DIVISION
CURTISS-WRIGHT CORPORATION
SOUTH BEND, INDIANA
Distributed in Canada by Canadian Curtiss-Wright Ltd.

TURN PAGE

V-12 ENGINE...MORE POWER-MORE PERFORMANCE FOR THE CW-226

Now — with the 430 hp CW-226 you get production unmatched by any other two-axle scraper. An increase of 70 hp combines with the 26 cu. yd. struck, 36 cu. yd. heaped capacity of the mighty CW-226 to pile up bigger loads — faster cycles — greater profits than any competitive machine.

In addition to this top speed and performance, the big CW-226 incorporates exclusive Roto-Gear steer for perfect, effortless control — constant live power control unit and easy-loading, curved bowl design for top performance in the cut — Positive roll-out ejection for fast turn-around in the fill area . . . all adding up to greater profits for you with the new V-12 CW-226.

Call your C-W distributor for details on these and the many other features that make Curtiss-Wright the industry's highest producing scraper line.

CURTISS-WRIGHT—A complete line of high-performance earthmovers

SELF-PROPELLED SCRAPERS

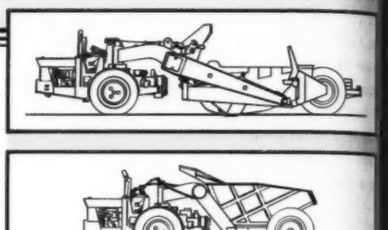
Four, 2-axle scrapers and a 3-axle scraper provide capacities from 7 to 26 cu. yds. struck, up to 36 cu. yds. heaped. A general brochure and individual specification sheets are available from your distributor.

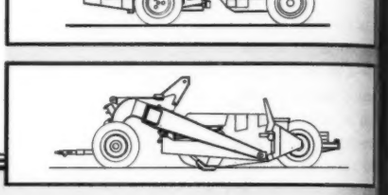
REAR DUMPERS

Three rear dumpers in capacities of 25 and 35 tons are interchangeable with corresponding scraper models. For details, request a general brochure or individual specification sheets from your Curtiss-Wright distributor.

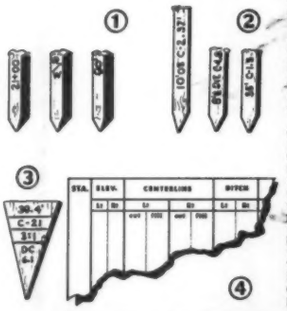
TRACTOR-DRAWN SCRAPERS

The CWT series of six tractor-drawn scrapers covers a capacity range of 8 to 30 cu. yds. struck, up to 39 cu. yds. heaped. Ask your distributor for a comprehensive specification sheet on the CWT line.



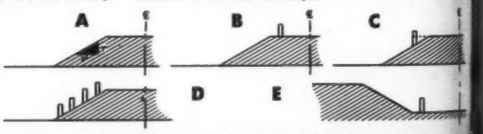


STAKES—THEIR USE ON AN EARTHMOVING JOB



Once the job is awarded, the owner's engineer will usually set certain stakes by which the dirt will be moved. The first among these will be the right-of-way stakes. These define the extreme limits of the property belonging to the owner. They are usually placed at every station and at every break in the right-of-way. (Fig. 1) These stakes usually show the station number and distance to the center line. Another class of stakes are information stakes. (Fig. 2) These stakes give construction information for structures such as head walls, culverts and clearing limits.

Other necessary information can be shown in a variety of ways. This information would include distance to center line, shoulder slope and back slope, height of fill or depth of cut, ditch center line and ditch cut. (Fig. 3) In some instances this information is listed on slope stakes set by the owner's engineer at the toe of fills or the top of the cuts. These are set exactly at the toe or top or else offset a specified distance to prevent their being disturbed. In other instances this is shown on special stakes offset from the center line. A third manner of handling this consists of referencing everything to either the right-of-way stakes or a special offset line and furnishing the contractor with "grade sheets" from which he can set all necessary construction stakes. (Fig. 4) On cuts and fills of any size the most important stakes are probably the slope stakes. These stakes are set initially at the toe of fills and the top of the back slope on cuts. From this point they follow the slope as the work progresses. They should be checked frequently enough to assure close control of the slopes. It is customary to carry each stake from the preceding stake. (Fig. D) This can be done with considerable accuracy, but any errors made would tend to be cumulative. Therefore, on cuts and fills of considerable magnitude these should be occasionally checked with an instrument and steel tape. This is particularly important on steep slopes where corrective action is very expensive. Slopes are generally indicated by a ratio of the horizontal distance to the vertical distance. (Fig. A) A 2:1 slope indicates that for every one foot of vertical rise the slope narrows two feet horizontally. In checking slopes, if the slope is too full but does not require corrective action, the stake will actually be set on the top of the fill and in from the edge of the fill the required distance to make the correction. (Fig. B) If the slope is hollow or sagging, then the stake will be set with a grade mark indicating where the dirt should fall. (Fig. C) The same principle but in reverse applies to cuts. Should the slope be too steep then the stake should be set out in the floor of the cut. (Fig. E) Should the slope be too full, then the stake should have a cut marked on it indicating the amount of material that should be removed to correct the slope.



SOUTH BEND DIVISION

CURTISS-WRIGHT

CORPORATION

SOUTH BEND, INDIANA

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FREE . . . An attractive binder for the complete C-W Job Information series is available from your Curtiss-Wright distributor. Ask for it

AD NO. 52-80 PRINTED IN U.S.A.

ee gantries—two 50-ton American R-20's and a 35-ton gantry built by the contractor, vo Corp.—handle forms and concrete for the new Cumberland Dam. Two work along upstream cofferdam handling forming; the third operates along the downstream face place concrete. Work is being done in three stages, with the midstream portion last.

75 feet. These are formed by timber forms fabricated on the job. Most of the concrete lifts near the pier bases are held to the 5-foot maximum because of the width. As piers rise and taper, lifts increase to a maximum of 10 feet. Succeeding lifts are not permitted for a 5-day interval on the mass-concrete spillway sections, and for a 3-day interval on the piers.

Gate erection

An interesting design feature of the gate construction is that the motor-driven units to lift the gates will be located on top of the piers. Each will turn a shaft that will extend to a non-drive end at the next pier. The pier supporting this non-drive shaft end will also support a motor drive for the next bay gate, and so on down the line. This design has added a safety feature to the dam operations. If, for instance, the motor drive on pier No. 1 burns out, making it impossible to lift gate No. 1, a coupling on pier No. 2 will permit the shaft to be connected to the motor drive that normally powers gate No. 2.

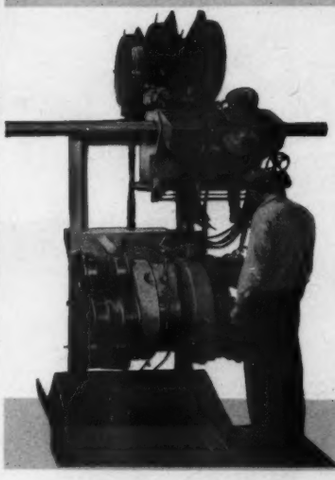
Gates No. 1, 5, 6, 7, and 11 will be the submergible type that can be raised or lowered to permit the water to flow over or under them. These gates will be used to control normal pool elevation and to permit the passage of ice and debris over the top of the gates. This eliminates the need for raising the nonsubmergible tainter gates and allowing the full head of the pool to flow downstream.

All eleven gates will have triangular steel arms that pivot on trunnions fastened to anchorages on the downstream face of the piers. The trunnion anchorages are held to the piers by forty-eight 1⅛-inch-diameter high-tensile steel bars, 41 feet long, and embedded in the concrete piers.

The steel trunnion assembly is slipped over and through the bars, and a steel bearing plate is fitted over the bars and against the trunnion assembly. A 100-ton Stressteel center-hole jack elongates each anchor rod about 2 inches, stressing the bar to 50 tons. A reversible wedging ram in the jack then drives a steel wedge into the hole of the bearing plate to hold the stress in the bar. A Blackhawk electrically driven hydraulic pump is used to power the jacks. Two jacks are used to coordinate the stressing of the bars at each of the two anchor-rod clusters. Stressteel Corp., Wilkes-Barre, Pa., is handling this phase of the job for Dravo.

William Huysman is the project manager, and Art Archer, the field superintendent, for Dravo. Roy Klingebiel is the resident engineer for the Pittsburgh District, U. S. Army Corps of Engineers. THE END

his gantry, one of two used on tracks ning the upstream cofferdam cells, ndles forms and reinforcing. Here it epares to lift one of the inverted-L tforms that butt up against the tracks d allow the gantry to ride out over e gate position.



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VICTOR MODEL "DEMS"

A big money-maker for anyone rebuilding tractor rollers and idlers on a production basis. Double-ended, multiple spindle mounts 8 track rollers, or 2 idlers, at a single loading. 360° rotation permits rebuilding all faces and flanges without additional handling. Automatic move-over assures uniform build-up. Dual wire feed cuts rebuilding time in half. Comes complete with power-saving power unit, specially engineered for automatic welding.

ROLLER FLANGE
FLAME HARDENER

prevents flange wear and roll over (cause of many premature failures) by flame hardening renewed area to approximately 50 Rockwell C. Dual torches flame harden both inside and outside of flanges simultaneously.

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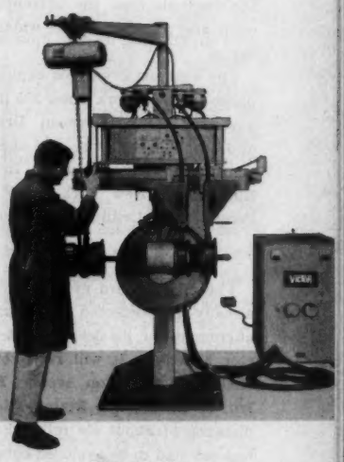


Economy Size
ROLLER AND IDLER REBUILDER
VICTOR MODEL B

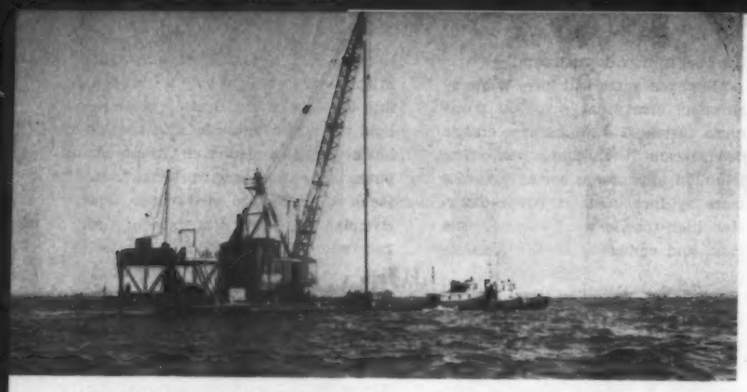
Ideal for contractors and small repair shops. Produces same high quality work as larger Model DEMS, but mounts only two rollers or idlers at a loading. Has same type double wire feed, automatic move-over, and motorized positioning of work. Built-in jib crane (rated ¼-ton capacity) enables operator to handle rollers and large idlers with ease. Price includes power supply.

VICTOR FLUX GRINDER

processes 1500 pounds or more of fused flux per hour with very low flux loss. Sizes flux to factory specifications. Savings made by reclaiming only 12,000 pounds of flux returns low initial cost of grinder.

Mfrs. of high pressure and large volume gas regulators; welding & cutting equipment; hardfacing rods; blasting nozzles; cobalt & tungsten castings; straight-line and shape cutting machines; roller and idler rebuilding machines.

67-R



One of the drilling platforms used to make exploratory borings in Upper New York Bay for the aqueduct between Brooklyn and Staten Island is moved into position. The platforms are pinned to the bay bottom and are strong enough to withstand tides and 80-knot winds.

Contractors & Engineers staff article

Off-shore towers probe harbor bottom

Exploratory drilling for new aqueduct route handled by three specially designed platforms

By using three off-shore drilling platforms to probe the unchartered bedrock under Upper New York Bay, a contractor was able to forget about the vigorous tide, the currents, and wind and weather in the wide, open bay.

The contractor on this exploratory phase for New York's new $25 million aqueduct tunnel between Brooklyn and Staten Island consisted of a joint venture between Raymond International, Inc., New York, N. Y., and Pennsylvania Drilling Co., Pittsburgh.

Seek route

The city's Board of Water Supply already has selected a preliminary alignment for its deep, 1-foot-diameter aqueduct. It will run from the vicinity of Hamilton Avenue, Brooklyn, to St. George, Staten Island, a distance of about six miles. But the bedrock had to be explored before the final route can be adopted. The major design problem is how deep to go to be sure of sufficient rock cover for the aqueduct.

Borings were taken along the path of the proposed aqueduct to locate the surface of the bedrock, spot any serious fractures, and extract specimens of rock for analysis. Crews sank 20 probes, 200 to 1,000 feet into rock, on about 500-foot centers across the bay.

Exploratory borings in water are generally made from floating equipment. However, the depth of these harbor probes, plus the tide and elements, made it impossible to hold floating rigs still enough to drill the holes.

Use towers

As a result, Raymond and Pennsylvania Drilling designed steel towers that could be securely pinned to the bay bottom during drilling, yet could be easily picked up to be moved to the next boring location. Labeled Able, Baker, and Charlie, the identical towers were fabricated at the Grand Iron Works yard in the Bronx.

The first tower, Able, was hauled to its initial boring location on the stern of a Wiley 40-ton derrick float operated by George Rogers Construction Co. This derrick float handled the lifting, hauling, and positioning of all three towers during the work in the bay.

With the tower overhanging the stern on two steel outriggers, the Wi-

"Best rigs for my money—they're doing an excellent job," says R. E. Robertson, superintendent of excavation for Montag-Halvorson-McLaughline & Associates on the John Day Lock and Dam project near The Dalles, Oregon. He's talking about his seven DW20Gs with Athey PW20 Wagons, carrying 112,000 lb. shot rock or glacial gravel. Five of the D[illegible] stockpiled 100,000 cu. yd. in three weeks. Day after da[illegible] make 185 three-mile round trips, pulling big loads at 3[illegible] Says Master Mechanic Huey Long, "These DW20Gs are [illegible] to stay on the job."

"These DW20Gs are really hauling sons-o-guns. We've got over 600 hours (in just two months) on them and they're doing great. And this SynchroTouch is undoubtedly the coming thing—only it's here now." This is the way R. A. Heintz describes the five DW20Gs with 482B Scrapers on Heintz & Rogers' railroad relocation project around Ice Harbor Lock and Dam in Walla Walla County, Washington. The tractor-scrapers [illegible] belt-loading and push-loading tasks. The versatility of the tractor-scrapers has been augmented by sideboarding for [illegible] top loading. Hauling 25 yards of bank run gravel, the D[illegible] move 240 loads every eight hours, cycling in four minutes the ¾-mile haul.

A floating derrick pins the drill platform to the bay bottom by driving 130-foot-long 10¾-inch-diameter steel spuds through six 12-inch pipe sleeves. Floating equipment, which generally handles this type of work, was impractical in the wide open bay.

Charlie, another of the rigs, takes borings along the bottom. Probes go 200 to 1,000 feet into rock on about 500-foot centers. A 3-man crew handles the work. The lower platform holds pumps and mixing tank. Lights, beacons, and foghorns on the rig warn navigation in the bay.

ley derrick drove 130-foot-long, 10¾-inch-diameter steel spikes through six 12-inch pipe sleeves to pin the tower to the bay bottom. A McKiernan-Terry 9-B-3 steam hammer was used to drive the spuds, which gave the towers enough stability to withstand 80-knot winds and support a 35-ton load. All the boring equipment was already aboard the tower, and the 3-man crew lost no time in getting started. They worked around the clock, seven days a week, on the 20× 25-foot towers to complete the job. Because of the heavy marine traffic in the harbor each 40-foot-high tower was equipped with lights, flashing beacons, foghorns, and ship-to-shore radios. Electric power was provided by Koehler 1,500-watt generators.

Casing sunk

Each boring was made by first sinking 8, 6, and 4-inch-diameter casings through the water and soil overburden to rock. When rock was reached, the crews switched to equipment similar to that used by oil drillers. This consisted of a Sullivan hoist unit and a Joy 22 drill to position, attach, and sink the 20-foot drill rods supporting the Sprague & Henwood 2-inch-diameter diamond-core bit. As this bit advanced, it cut a 1½-inch-diameter core and trapped it inside the 20-foot-long core tube.

During the sinking of the cores, drilling mud, Aqua-Gel, and Zeo-Gel, were pumped down through the drill rods and bit and forced back up through the casing. Moyne and Gardner-Denver mud pumps were used for this purpose. The pumps and 800-gallon mixing tank were located on the lower platform 12 feet below the drilling platform.

Each time a 20-foot-long core was drilled, it had to be removed by hoisting out the entire string of drill rods and uncoupling them one at a time.

Construction of the aqueduct is expected to begin in the next year or two, and the Board of Water Supply plans to finish it by 1965, when completion of the Narrows Bridge is expected to create a population boom on Staten Island. The new aqueduct will supply 300 million gallons of water a day to Staten Island.

Charles Mergentine was the project manager, and Robert Ficarra, the job superintendent for the joint venture.

THE END

◀ For more facts, use Request Card at page 18 and circle No. 265

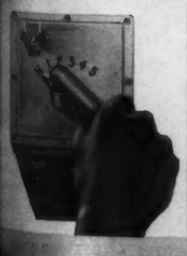
MORE LOADS MOVED
MORE PROFITS EARNED
WITH CAT DW20s

versatile and dependable

Look at the big jobs—where high, continuous production is a must! John Day Lock and Dam: 3,700,000 yards—Cat DW20G Tractors with Athey PW20 Wagons for prime movers. Railroad relocation for Ice Harbor Lock and Dam: 6,500,000 yards—another Cat DW20G-482B Tractor-Scraper job.

Put this versatile, dependable DW20G on your job and watch its top performance on all conditions, month after month! Its 345 HP (maximum output) Cat Diesel Engine quickly speeds it to top 35.8 MPH, cutting precious seconds from cycle time. Big power takes it up grades fast, keeping production on schedule. With interchangeable 27 cu. yd. (heaped) Cat 456B or 34 cu. yd. (heaped) 482B Scrapers or 40-ton PW20 Wagons (built by Athey Products Corporation), it loads fast—hauls fast—dumps fast. See your Caterpillar Dealer for on-the-job proof of this versatile, dependable DW20G.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.



TOUCH AND GO SHIFTING WITH SYNCHROTOUCH Optional Synchro-Touch Transmission Control lets operator dial desired gear, combining split-second shifting with economical direct drive transmission. DW20G with SynchroTouch means faster shifting for faster cycles, more big payloads per hour, and reduced operator fatigue.

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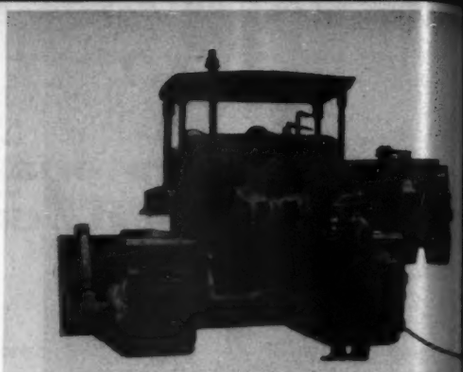
POWERFUL DW20G
FOR PROVED PERFORMANCE
ON THE BIG JOBS



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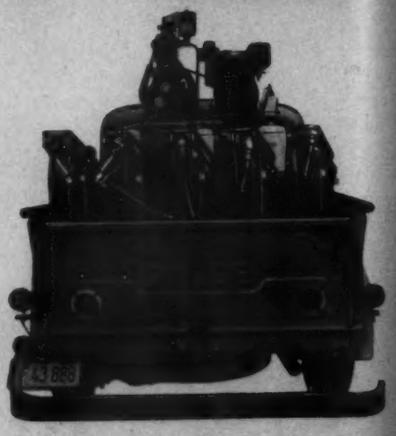
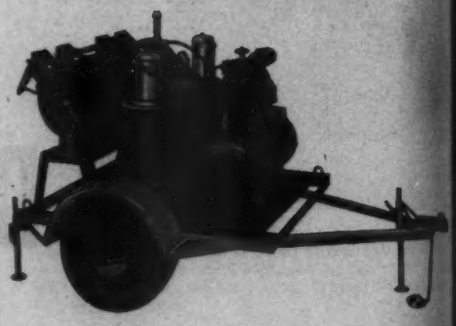
LINCOLN LUBROVANS* AND LUBMOBILES*



Portable Lubrication Equipment



LUBRICATE IN THE FIELD...
SLASH EQUIPMENT DOWN-TIME...

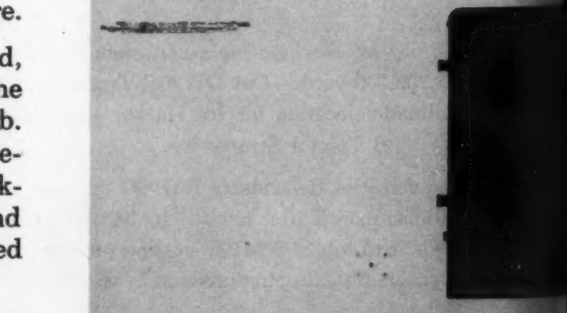
Clams and cranes, dozers and cats often "act up" when pressure is on and lubrication is off schedule. Down-time is doubly costly when the day is needed to get under the wire.

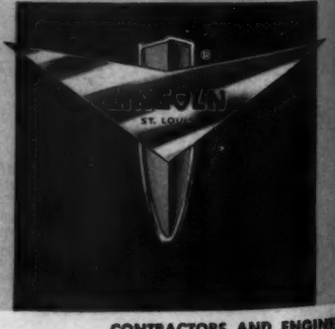
No matter how little or how much equipment is in the field, Lincoln engineers know what it takes to custom-design the portable lube rig that can keep the equipment on the job. It might be a two-wheel trailer with drum pump and retracting hose. A more extensive grouping would be "packaged" where the need is for a wider range of lubricants and a fast way to apply them. The "package" is often designed to fit a truck or trailer already in use.

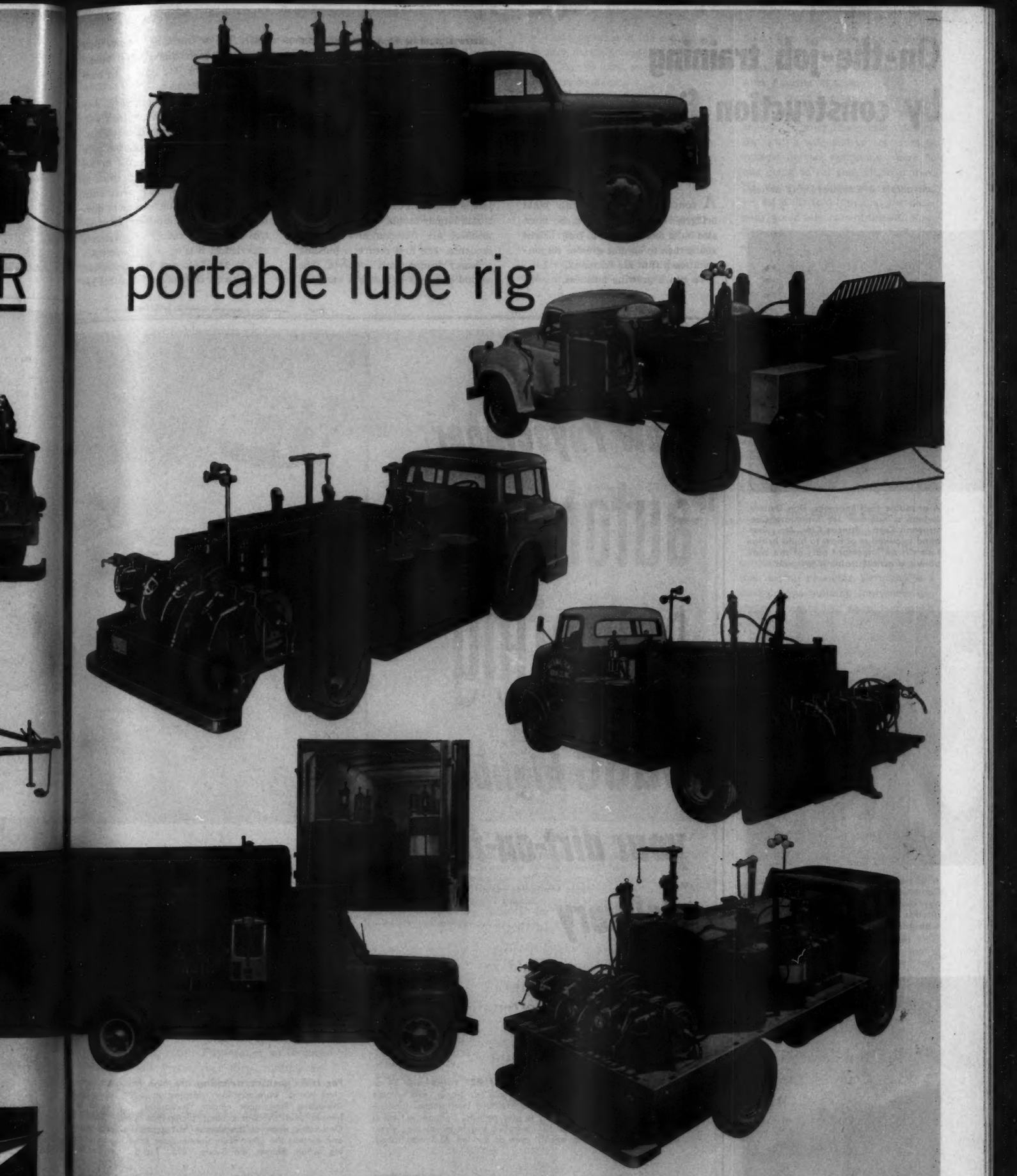
Lincoln LUBROVANS (custom planned around 400-lb. drum size pumps) and Lincoln LUBMOBILES (assemblies scaled to 120-lb. drum size units) are matched to the exact equipment you have on the job.

For more details write for Catalog No. 32 and Engineering Manual No. 33.

*Trade name registered







LINCOLN ENGINEERING COMPANY

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For more facts, use Request Card at page 18 and circle No. 266

On-the-job training by construction firms

Contractors & Engineers staff article

A contractor must not only build bridges, roads, and schools, he must also build men. He has to train bright young men to assume greater responsibilities within his company.

To run a growing business, a contractor should develop each employee according to his individual abilities. Some of the men will become foremen, some will go on to become superintendents, and a few will eventually become officers of the company. How far they go depends both on their abilities and on the amount of encouragement and training they receive while on the job.

In a time when almost every subject is taught in college, construction is still largely taught in the field. The teachers are foremen and superintendents. The first course is pushing a buggy loaded with concrete. The second course is swinging a hammer. There are a thousand courses that follow. In each course, the student learns by doing. He learns the hard way, and he learns well.

Even though a young man may come to a construction company with an engineering degree, he is still considered comparatively useless until he has spent several years in the field. His first year he may spend as a timekeeper. He may even learn something about the science of driving nails. For a graduate engineer, this may be a rather disheartening experience; it is up to his supervisors to give him help and encouragement.

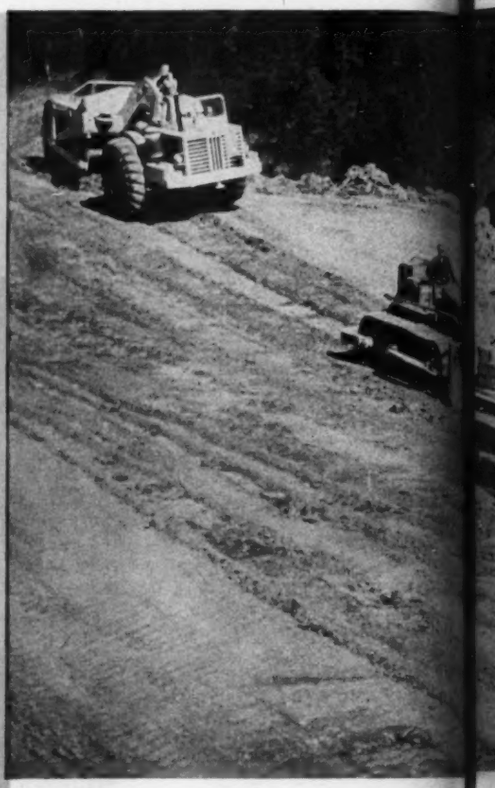
The wise contractor keeps his eye

A graduate civil engineer, Don Deister, swings a hammer for Interstate Construction Corp., Kansas City, Mo.; first-hand knowledge of how to build bridge forms is an important part of the company's practical training program.

A carpenter's apprentice for Interstate Construction 7 years ago, Ray Collins is now assistant to the superintendent and attends engineering school at night—with Interstate picking up the tab.

Edward D. Kelly, president of Interstate Construction Corp., is always keeping his eye out for promising young men working on the company's bridge projects.

How Payscraper® "automotive" operating ease highballs your dirt-on-fill delivery



You won't need stunt-car "jockeys" or muscle men to give you the dirt-on-fill bonus the 375-hp International Payscraper rigs can deliver! Almost all the dangerous hard work, and rump-bumping of rubber-tired rig operation is engineered out of Payscraper models. An exclusive combination of operating ease, safety and comfort features is engineered in!

Push-button, finger-tip ease! Your operator simply pushes a button to direct-start the DT-817 Diesel and ready 375 high-torque hp to give a cycle-speeding Payscraper rim-pull of 60,000 lbs.; plus time-saving "no-lag" control power!

Your operator pulls directly out of 90° turns—with 34-cu. yd. heap loads on either the 2-axle "295" or 3-axle "495." Ample power and traction team with the exclusive International tandem-pump, rack-and-pinion steering to give positive, right-angle turning with full power. This finger-tip controlled system leaves the "steering feel in the steering wheel," even at the top 33.5 mph speed.

For fast, positive dumping, the high Payscraper apron gives you a "barn-door-like" opening up to 94 inches! The positive-acting Payscraper ejector mechanism is powered by the International shock-absorbing, planet-type Cable Control. One cable drum of this simple, fast acting unit actuates apron and ejector; the other drum positions the bowl to control spreading action. Shown, the 3-axle "495" fast-dumping on the

out for promising employees. He gives them more responsibility. To broaden their experience, he gives them a variety of work. When they have mastered one job, he pushes them up to the next.

There is no place in the organization for a supervisor who is jealous of his job—a man who is afraid to tell others what he knows for fear of becoming dispensable.

For most contractors, there is no formal training program within the organization. The training goes on from day to day in the field, and sometimes in the office. Occasionally, a man will attend night school to receive engineering training. Each contractor works out an informal method of instruction that suits his needs.

Field and office

Take Interstate Construction Corp., Kansas City, Mo., for example. It is a small ($2 to $3 million annual volume) bridge and building contractor that is aware of the importance of developing young men in the company. The president, Edward D. Kelly, believes that men on their way up should learn all phases of the business—both field and office.

Seven years ago, the company hired Ray Collins as a carpenter's apprentice. Partly because of the company's help and partly because of his own efforts, Ray is now an assistant to the superintendent.

For the first three years, Ray took part in the apprenticeship training program sponsored by the union. After he had become a carpenter, he went on to study nights at a junior college.

President pays tuition

During this period, his superintendent gave him a variety of work to do on the job, showed him how to read blueprints, and how to do layout work. When work was slow in the field, Ray went into the office to assist with some of the details of preparing a bid. He was also put to work figuring job costs.

Ray continued to go to school nights. He decided to switch from the college to Finley Engineering School. But with a wife and two children to support he was wondering where he was going to get the tuition money. He didn't have to wonder very long, for Ed Kelly told him that the company would take care of the bill. Now, Ray goes to engineering school in the evenings at the company's expense.

Engineer pounds nails

Another promising young man working for Interstate received just the opposite treatment. Don Deister is a civil engineer who graduated from a Kansas university in June of '59. Last summer, he was put to work pounding nails. He worked as a carpenter building forms for bridges. Along with this rough work, he was also given a chance to do some layout work. To round out his practical education, he also worked in the office helping with the preparation of bids and running down costs.

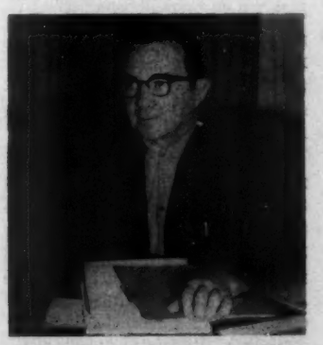
Fred Berglund & Son

Fred Berglund & Son, Inc., Chicago, is another contractor that is constantly trying to upgrade capable men within its ranks. Berglund is a medium-size building contractor doing between $6 and $8 million worth of work each year.

About half of its twelve field superintendents have come up through the company ranks. This has been

(Continued on next page)

Roger Berglund, president of Fred Berglund & Son, Chicago, makes his superintendents responsible for spotting and then training young men for higher positions.



Vernon Travers, executive vice president for Standard Paving Co., Chicago, makes it a company policy to upgrade likely young men whenever possible. Training is done primarily in the field.

◀ For more facts, use Request Card at page 18 and circle No. 267

power-shifts the Payscraper, up or down almost easing his car into automatic drive. The 4-speed, etary-type, torque-converter transmission gives load-speeding *automatic* direct-drive lock-ups in d, third and fourth gears!

ur operator power-steers the 150,000-lb. loaded craper with automotive-like ease. He commands exclusive "mind-reading" International rack-and-, tandem-pump steering system—plus 3-degree rd spindle pitch that improves scraper balance prevents "bucking bronco" nose-downs in high- turns!

controls 34 cu. yd. loads on hills, fills, turns—here—with positive-acting Payscraper air brakes. power-controls all Payscraper dirt-handling ac- finger-tip easy, with the International PTO- constant running cable control unit!

he rides in a foam-cushioned, 15-adjustment, seat that gives positive, selective ride-control ch luxury car comfort.

Up or down power-shifting—effortless power-steering—fast power control of Payscraper dirt-handling—all help your operator give you fast "kick-outs" and get full pusher hp efficiency. The highest power-to-payload punch of all 34-cu. yd. scrapers helps highball dirt delivery. The planet-powered TD-25 and TD-24 are "pushing" for this fleet of "295's"—building superhighway!

Here's the big torque converter transmission—that helps Payscraper models turn 375 turbocharged hp into industry topping production! Besides providing smooth shifting and speeds for every need, this torque converter gives automatic lockup for direct, load-speeding mechanical drive in 2nd, 3rd, and 4th gears!

r yourself what it means, in highballing your -fill delivery, to arm your operators with per advantages. Prove what happens when e them the highest power-to-payload punch of cu. yd. rigs—along with Payscraper operating d safety. Choose the 2-axle "295," or 3-axle d let your International Construction Equip- Distributor demonstrate!

International® Construction Equipment

International Harvester Co.
180 North Michigan Ave., Chicago 1, Ill.
A COMPLETE POWER PACKAGE

(Continued from preceding page)

possible because supervisors are always on the lookout for young men who are not afraid to work. When they spot such a man, they give him more responsibility. They give him a variety of work to do. They help him along, giving him as much work as he is capable of handling. Usually, he stays in the field. Estimating and cost work is left up to the five key men in the office.

Roger Berglund, president of the company, does not, at the time, hire graduate engineers. The engineers generally employed by the architects assist with the complicated field engineering problems that may arise from time to time. In bringing men up through the ranks, Roger Berglund feels they are more easily trained to his own methods and way of thinking.

Standard Paving Co.

The Standard Paving Co., Chicago, also realizes the importance of training its men. The company does asphalt and concrete paving work exclusively. Working primarily in the state of Illinois, the company keeps two asphalt plants and three paving spreads busy throughout the construction season.

Most of its superintendents have come up through the ranks. With the encouragement of the supervisors above them, some started as operators and went up the line from pushers to foremen and superintendents.

Young engineers attending college sometimes break in with the company during summer vacations. They generally work in the field office as a timekeeper or assistant to the office manager. In this position, they can get a working knowledge of paving construction without actually running the equipment. Graduate engineers, who have had no practical experience in construction, are also put to work in the field office. The engineers usually graduate from the field office to the home office, where they learn to figure costs and prepare bids.

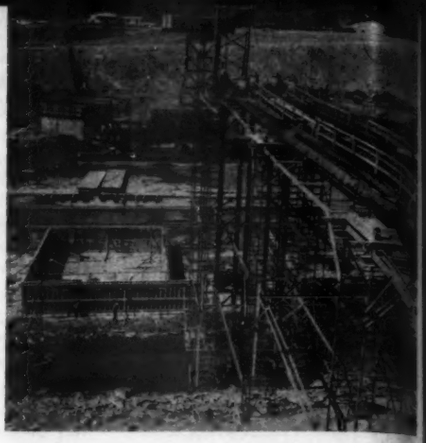
THE END

Griffin Corporations elect new president

■ David H. Griffin has been elected president of the Griffin Corporations, New York, N. Y. They consist of the Griffin Wellpoint Corp. and the Griffin Equipment Corp., which is the New York and New Jersey distributor for Detroit Diesel engines, Allison Torqmatic transmissions, and Delco products.

Griffin has served the companies as purchasing agent, vice president and treasurer, and most recently, executive vice president. He follows the late Hugh J. Hush in the presidential post. The two companies were founded by Griffin's father, Timothy G. Griffin.

David A. Werblin has been elected vice president and general sales manager of Griffin Wellpoint Corp. James S. McConville has been elected vice president and general manager of Griffin Equipment Corp.



THIS TOWER AND PLATFORM support six electrically driven pumps and six 14-inch discharge pipes at the construction site of the Captain Anthony Meldhal locks and dam on the Ohio River. The 75-foot-high tower of Waco Hi-Load steel shoring is connected to the cofferdam by a platform 134 feet long. Throughout the year, river seepage under the cofferdam is pumped out. Designed by Waco Mfg. Co., Cleveland, the tower supports an estimated load of 60,000 pounds, made up of pumps, pipe, and water.

HOW POWER-STEERED, POWER-SHIFTED . . .

TD-25 takes ov

Even moving a blade-full of ... rock around the curve, there's no ... tion, no sluing to spill the load. ... TD-25's operator has separate speed ... trol of each track to get full-... performance, full time. And only the ... TD-25 has the power plus of the ... start, turbocharged DT-817 Internat... engine—that delivers 230 high-torque ...

—on California mining operation

Even before all the blast dust has settled, this International TD-25 is slamming tons of shot-rock from the benches, so trucks can resume hauling to the processing plant. Then, at this gypsum mine in California, the "25" takes over the "shovel-feeding" chore—dozing full blades of rock upgrade, downgrade, and 'round the curves, to help keep the big dippers swinging full. And in between times, the "25" takes over its third tough project: benching new haul road around mountain slopes!

Three slam-bang rock operations to handle—it's a made-to-order situation for the Planet Power-steered TD-25!

"Dead-track drag" eliminated! You don't brake a track and "half-kill" your pull-power to turn, as you do with king-sized clutch-steered crawlers. With Planet Power-steering you simply change the speed of one TD-25 track—on-the-go, and with 2-finger ease! Around comes the fully-loaded TD-25—with "live" power on both tracks and both tracks pulling. Load-limiting "dead-track drag" is eliminated!

And combined, on-the-go Hi-Lo power-shifting lets you match power to load, instantly—forward or reverse. Just shift one track to high range—the other to low—to do slope-hugging, full-bite benching, or to operate straight ahead with off-center loads!

The "25" is platformed on new 7-roller tracks with double-box-beam frames. The design provides super undercarriage strength for slam-bang conditions—strength to match the full effort of the direct-start, high-torque DT-817 International Diesel engine.

Power-steer and power-shift the TD-25 with king-sized loads. Measure the bonus capacity you get with exclusive Planet Power-steering and Hi-Lo power-shifting. See how this control combination enables you to outearn other big rigs up to 50%. Then measure what it means to get this double-barreled advantage *only* in the TD-25—and as standard equipment *to boot!* Let your International Construction Equipment Distributor demonstrate.

International Harvester Co.
180 North Michigan Ave.
Chicago 1, Illinois
A COMPLETE POWER PACKAGE

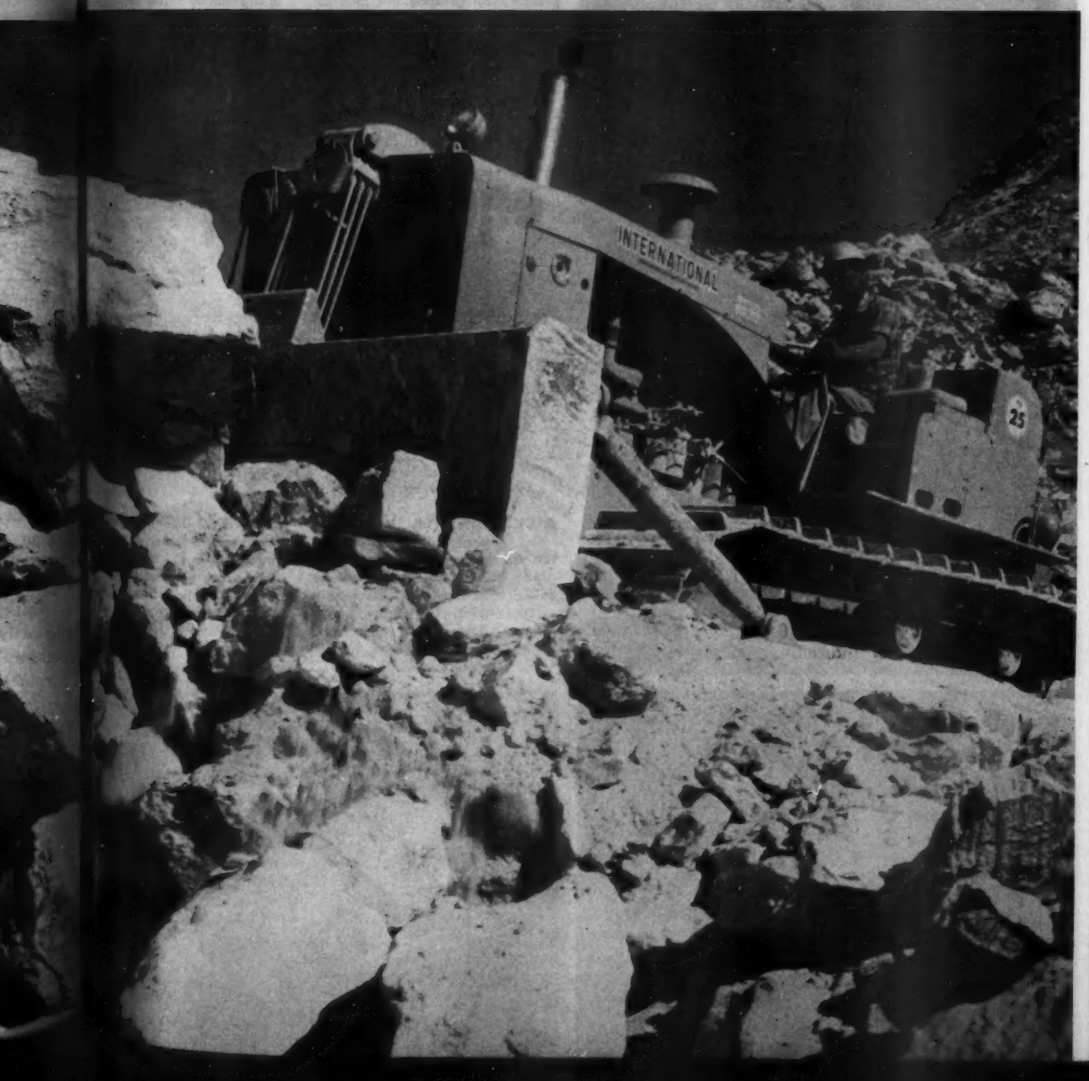
International® Construction Equipment

HOT SLAG IS BEING COMPACTED by a Jackson Model 300A compactor to elevate the main section of a road at Woodlawn, N. Y., under which will pass ramps for Mile Strip Interchange. Applied in 12-inch courses, the slag comes from a nearby steel furnace while still hot, enabling the contractor, Jackson, Drake & Piper, Inc., Buffalo, N. Y., to place it during freezing temperatures without fear of frost. The job calls for 300,000 cubic yards of the fill, averaging 15 feet deep.

"Boulder-dozing" after blasting— The TD-25 does some "blasting" itself to move "big-as-a-house" hunks of rock aside. Heavy-duty TD-25 Dura-Rollers defy the rock-dozing "grind"—with the industry's thickest shells to prevent flexing—positive grit exclusion—and 1,000-hr.-interval lube capacity!

Here's your 76-page cost and production estimating book—newest, most authentic and complete guide for estimating material-moving costs—and for selecting equipment combinations for top profits, *anywhere!* See your International Construction Equipment Distributor!

over three slam-bang rock jobs



Ramset assigns manager to sales district

■ A new district sales manager, Eugene T. Umpleby, has been appointed by Ramset Fastening System, part of the Winchester-Western Division, Olin Mathieson Chemical Corp., at New Haven, Conn. Sales in West Virginia, eastern Kentucky, southeastern Indiana, and parts of Ohio will be under his direction.

He was formerly with Phillips Industrial Products Co., Cleveland.

Canadian representative for Michigan equipment

■ William E. Lemmon has been appointed a district representative for the Construction Machinery Division of Clark Equipment Co., Benton Harbor, Mich. In the five eastern provinces of Canada, he will provide sales and marketing services to distributors of Michigan equipment.

White Motor honors two branch managers

■ The White Motor Co., Cleveland, Ohio, has named Robert G. Oakley of Cleveland and Floyd C. Hough of Omaha as Branch Managers of the Year. The awards in the nation-wide competition are based on sales and service in relation to established goals, market penetration, expense control, and profits.

General manager named for Euclid Division

■ V. L. Snow has been appointed general manager of Euclid Division of General Motors Corp., Cleveland. He was formerly director of engineering. In his new post, Snow is responsible for the administration of the four Euclid plants in Cleveland, the crawler-tractor plant at Hudson, Ohio, and operations of Euclid (Great Britain) Ltd. in Scotland.

B-G rental program for widener attachments

■ Barber-Greene Co., Aurora, Ill., is making road-widener attachments available on a rental basis through its distributors, which will act as lessors. Under the program, dealers will prepare lease agreements and make collections. The lease agreement allows a customer to apply 90 per cent of paid rentals against the purchase price.

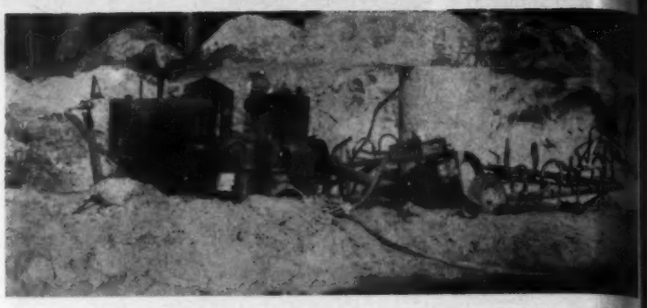
Advantages the program is designed to offer contractors include low initial investments and reduced maintenance and overhead. Contractors using the plan will be able to handle small-sized jobs profitably.

Attachments available include aggregate and stabilized-material strike-off attachments and extensions, tamping and leveling equipment, bevel end plates for five different mats, and a concrete slip-form vibrator attachment.

Detailed information on equipment, and weekly and monthly rental rates may be obtained through local Barber-Greene distributors.

◀ For more facts, use Request Card at page 18 and circle No. 268

A Griffin Wellpoint system draws ground water down to elevation minus 13 feet for this 5-foot-diameter 20-foot-tall wet well constructed on St. Simons Island off the Georgia coast for a development project. A dragline excavated to 3 feet above the minus 8-foot elevation, and then wellpoints were installed.



This Griffin pump removes about 3,000 gallons of water per hour from the two 6-inch-diameter headers encircling the wet well. Twenty-one 16-foot risers and ten 6 to 8-foot risers keep the excavation for the wet well dry. The base of the well is at elevation minus 8 feet; ground water was 2 feet below ground level.

Contractor beats ground-water problem on sewer job with

Wellpoints and teamwork

Contractors & Engineers staff article

The advantages of a wellpoint system were vividly demonstrated recently during the construction of a 20-foot-deep wet well that is part of the sewerage work serving the Devonwood Estates project on St. Simons Island off the coast of Brunswick, Ga.

Seaboard Construction Co., Brunswick, holds the contract for grading, paving, water, and sewerage work for the development.

The bottom of the 5-foot-diameter well, consisting of two 8-foot and one 4-foot reinforced-concrete pipe joint, had to be sealed and positioned at elevation minus 8 feet.

As soon as excavation got under way, Seaboard hit ground water at elevation plus 10 feet—just 2 feet below the existing ground level. The contractor continued his excavation, using a dragline bucket, to a point 3 feet above the minus 8-foot elevation. It was obvious at this point that the water could not be pumped out fast enough and that further excavation was futile. The sides of the hole just kept slipping into the excavation as water poured through seams at a rate of 3,000 gph.

Wellpoints installed

A Griffin Wellpoint system, consisting of two 6-inch-diameter headers at the plus 3-foot elevation, was installed to completely encircle the wet-well area. There were twenty-one 16-foot risers to draw the water down to elevation minus 13 feet, and ten 6 to 8-foot risers to handle any surface water running into the excavation.

With the Griffin Wellpoint system installed, Seaboard had no trouble

GRADE Use "carry-type scraper" action to grade with inch-close, labor-saving accuracy. Watch the earth boil into this 1½-cu. yd. Four-in-One as the operator does precise finish-grading.

GRAB Only the clam-action 4-in-1 lets you sit, grab, lift, and load "impossibles" like stumps, concrete, and rubble of all kinds. This action helps make the 4-in-1 a big money-maker for land clearing and site clearing—cuts your equipment investment.

...only clam-action 4-in-1's upgrade your income with...

"equipment spread"

Put the whole "equipment spread" of International Drott 4-in-1 actions to work. Prove in minutes that each 4-in-1 action doubles for one or more specialized machines; that each action gives you a great range of job-handling working positions; that you're really getting a "Forty-in-One"! Compare 4-in-1's exclusive shock-swallowing Hydro-Spring performance protection. See what it means to upgrade your income with a 4-in-1, far above what an old-style single-action loader, or any other limited-duty rig can earn you. Let your International Drott Distributor demonstrate!

INTERNATIONAL® DROTT®

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Drott Manufacturing Corp., Milwaukee 15, Wisconsin

BACK-DRAG Pull down materials wholesale (and safely) from the sand or gravel bank. And grade hard-to-get-at slopes with easily-controlled 4-in-1 back-drag action—which you get by simply moving a lever!

SCARIFY Use the scarifier attachment to loosen stony or compacted soils for easy loading or blading. The third valve of the standard International Drott hydraulic system provides the control power for the scarifier.

Trench excavation for the 8-inch-diameter line feeding the wet well is done by a B-E 22-B with dragline bucket.

The dragline backfilled with dry material while a crew with shovels sealed the slopes of the trench with dry sand to control water flowing into the excavation.

The dry surface sand provides a bed for the 5-foot pipe joints positioned in the trench, which is backfilled by a Cat D7 tractor-dozer, using excavated material stockpiled along the berm.

excavating to minus 8 feet in the dry.

The wet well is fed from a drop manhole that drains the development by an 8-inch-diameter line consisting of 5-foot Oconee Wedgelock pipe sections. This type of pipe has built-in gaskets, allowing for a permanent watertight slip joint that eliminates the need for any type of joint sealer in the field. Under the circumstances, this type of pipe joint was ideal, since the sewer line was installed partially submerged under ground water.

Seaboard used a Bucyrus-Erie 22-B crane, with a 50-foot boom and a 1-yard dragline bucket, to excavate the deep trench for the feeder line between the manhole and wet well.

Ground water flowing into the trench made this phase of work slow and tedious. A stratum of hardpan formed a shelf, and water flowed off it into the excavation, running out with such a velocity that it continually washed the sides of the trench to the bottom.

The contractor found that sump pumps were of no use because fine sand in suspension clogged them.

Undercuts trench

The dragline excavated the trench and stockpiled material along the berm. The excavation was carried down to a point a foot or two below the design grade of the feeder line. Up to this point, the crew did not attempt to control the ground water.

After undercutting the pipe alignment, the crew shoveled dry sand along the surface of the trench walls to control the ground water flowing into the trench. The dragline then used the dry surface sand to build up a bed for the pipe joint. The undercut trench was backfilled with dry sand so that the water already in the trench was partially absorbed.

The sequence had to be repeated many times until a suitable bed was built up for the pipe joint. It required an alert crew to keep the trench walls sealed with dry sand and an expert dragline operator to backfill and excavate the trench.

Once the 5-foot pipe joint was installed, a Caterpillar D7 tractor-dozer was used to backfill the trench with material stockpiled along the berm.

C. B. Hereld was the superintendent, and O. L. Ammons, the foreman of the water and sewer crew for Seaboard Construction. THE END

STRIP Set the 4-in-1's clam in "carry-type scraper" position—strip sod or topsoil with efficiency to match specialized, single-purpose stripping equipment. And get jobs other rigs can't do.

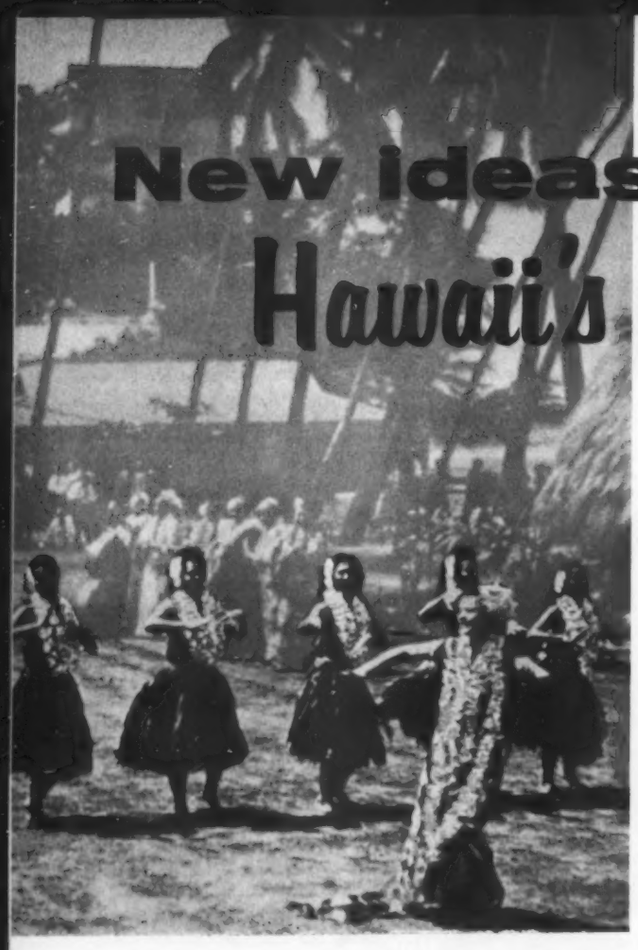
SPREAD On-the-go, put down a layer of topsoil, fill dirt, or "cover" with exclusive 4-in-1 "carry-type scraper" accuracy. Regulate thickness of layer you spread, with fingertip ease!

BOTTOM-DUMP End the sticky materials problems, for good! Opening the clam of this 2¼-cu. yd. TD-15 Four-in-One pulls material from bucket surfaces—gravity down-pull does the rest—to assure positive, self-cleanout bottom-dumping.

PICK-UP Employ easily-controlled clam action to fill the 4-in-1 with elusive loose materials, in one fast gulp—and without "chasing" them. Watch this 1⅛ cu. yd. TD-6 Four-in-One! You eliminate need for hand-shovel clean-up labor!

BULLDOZE Open the 4-in-1's clam and you've got a full-capacity, earth-rolling dozer—depth-regulated by positive radius control. This action can "double" for a specialized dozer 'most anywhere! And it's instantly available at a touch of the "job-selector" lever!

◀ For more facts, use Request Card at page 18 and circle No. 269



New ideas for Hawaii's building boom

by RALPH MONSON, field editor

(Additional photo on front cover)

"Can" splices are made for the prestressed piles for the Market Building. A 6-foot sleeve over the top 3 feet of pile allows another pile to be firmly seated.

Hawaii is experiencing a building boom that probably surpasses all previous building booms in interesting construction features and possibly outdoes them in some other respects.

While some of the work is spread throughout the islands, the major portion is concentrated on the island of Oahu. Last year the Building Department of the City and County of Honolulu issued permits for 6,354 new buildings with a total estimated cost of $113,561,137. In the first five months of 1960, additional permits were issued for 3,739 structures valued at $67,801,615.

This amount of building is being done on an island whose total population is some 474,868 persons. The population of the entire state is only 609,096, according to the 1960 census.

Reinforcing steel is carried up 4 floors for the Beach Park apartments; timber bracing does not interfere with forming or concrete placement. Normal lap splices were ruled out because of the numerous heavy bars.

End walls, partition walls, elevator shaft, and stair wells are formed simultaneously for the 11-story Dewey Way Apartments.

Materials and concrete for the twin additions to the Hawaiian Village Hotel are handled by a Universal Towercrane.

A Bay City crane with 125 feet of boom and jib casts concrete in a tenth-floor column for the 11-story addition to the Princess Kaiulani Hotel. An American Tubular tower, right, with 1-yard skip and 1¼-yard hopper, raises concrete.

High lifts for the 15-story Atkinson Towers apartment building are handled by a 30-ton Lorain and a Buck 110-foot hoist. The crane is raising a 1-yard bucket of concrete to the top of the building. The hoist raises materials for electrical and mechanical work. Par for building construction in the islands is 10 months.

A complex of cooperative apartments is under construction here with a P&H Model 355C truck crane swinging forming and shoring from one building to another.

The largest construction projects presently under way are not included in the above building-permit figures. Among these are the $40 million Standard Oil Co. of California refinery and the cement plants being built by the Hawaiian Cement Co. and Permanente Cement Co. (See "Slip Forms Raised by Pneumatic Jacks," C&E, July, 1960, page 108.)

Reports of the Honolulu Building Department show a steady increase in the value of building permits issued in the past five years. In 1956, the department issued 4,006 new building permits with a valuation of $56.6 million. Last year, the number of permits had increased by more than a third, and the value was doubled. Each of the first five months of 1960 shows a substantial increase over the corresponding months of 1959. In these five months, 3,739 permits with a total value of $67.8 million were issued.

In the "larger than single homes" category, apartments exceed all other types of structures in number as well as in total value.

The large industrial developments are primarily in the southwestern corner of the island in the Barbers Point Industrial area, although the Permanente cement plant is a few miles away at Nanakuli. Most of the apartments and hotels and some commercial structures are being built in the Waikiki area, which is the hub of the important tourist industry.

From any vantage point in Waikiki, it is possible to see from one to a dozen structures under construction. Crane booms, hoisting towers, and formwork dot the horizon, and seldom a day passes without the rhythmic beat of a pile driver being heard.

In this new state, designers and contractors are eagerly adopting new techniques and materials, as well as improvising some of their own. The following articles briefly describe a few of the construction features observed by this CONTRACTORS AND ENGINEERS field editor on a recent trip to the islands.

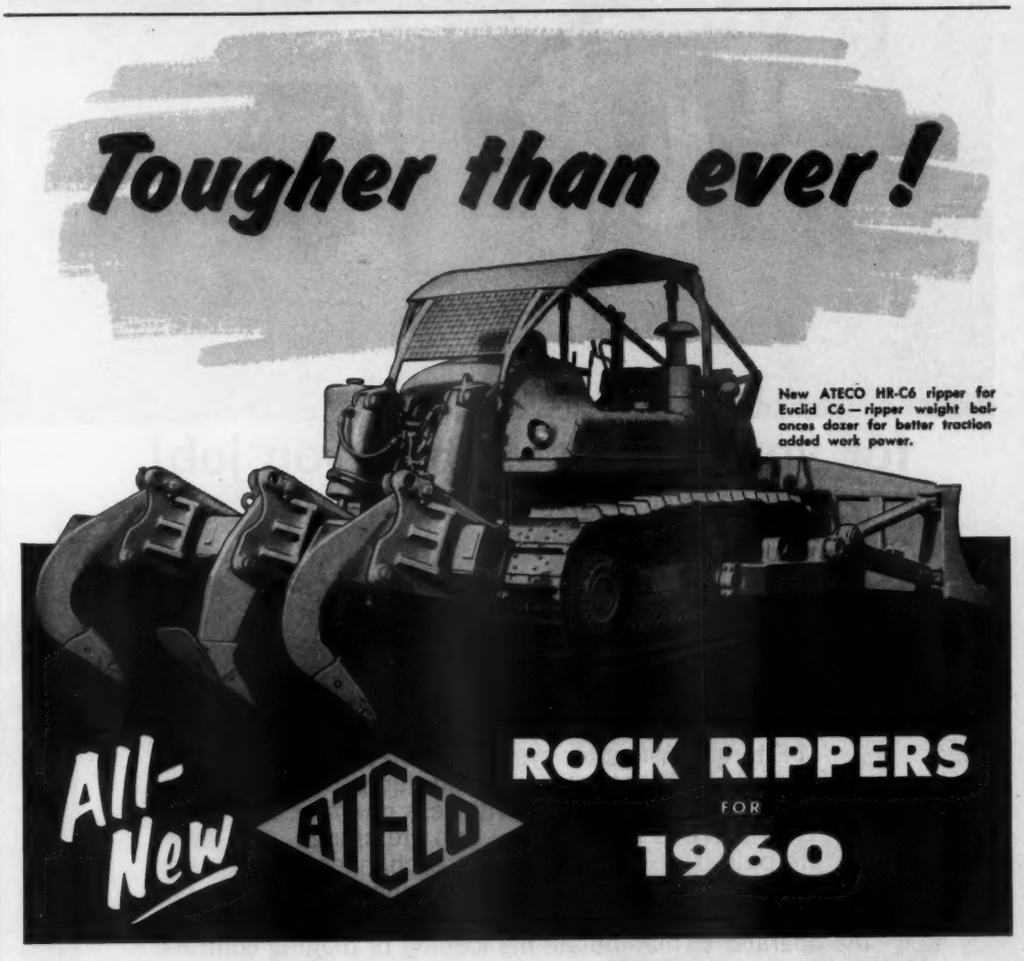
Most Hawaiian construction is of concrete, but the Kalakaua Shops in front of the Royal Hawaiian Hotel is a 2-story steel and frame structure with H and pipe columns, rolled I-beam girders, and wood joists. The sidewalk booths, typical of Hawaii, refuse to give way to progress. A problem on this job was building the structure around coconut palms that are being preserved.

Steel sleeves splice long prestressed piles

Questionable bearing values of the thin lenses of hard coral near the surface have led to the driving of very long piling for some of the high structures being built in Honolulu. A typical example is the Market Building under construction by the Oahu Construction Co., Ltd., in the Waikiki area.

Many of the piles for this structure had to go down more than 200 feet, making splicing a practical necessity. Adopting the procedure used successfully by the Hawaiian Land Co. on its Ala Moana Office Building, Oahu Construction Co. chose to drive relatively short lengths of prestressed-concrete piles, splicing them together

(*Continued on page 39*)



Built by the pioneer in the mounted ripper field, all-new ATECO Rock Rippers for 1960 are the masterpieces of 40 years' experience.

ATECO rippers on thousands of jobs throughout the U.S. and 43 foreign countries have proved ATECO's superior performance—licking tough jobs other rippers can't touch, staying on the job to keep scraper fleets rolling.

Today's ATECO ripper offers more than ever—bigger cylinders and rods, greater use of high-strength heat treated alloy steels, "beefed up" design at every point to give extra strength and dependability.

Only ATECO rippers offer the advantages of really big equipment—better performance from the start, superior performance with less downtime through the years. Why settle for less? There are 36 ATECO models available to match all popular big crawlers. Write or wire now for complete information—please address Dept. 20.

61

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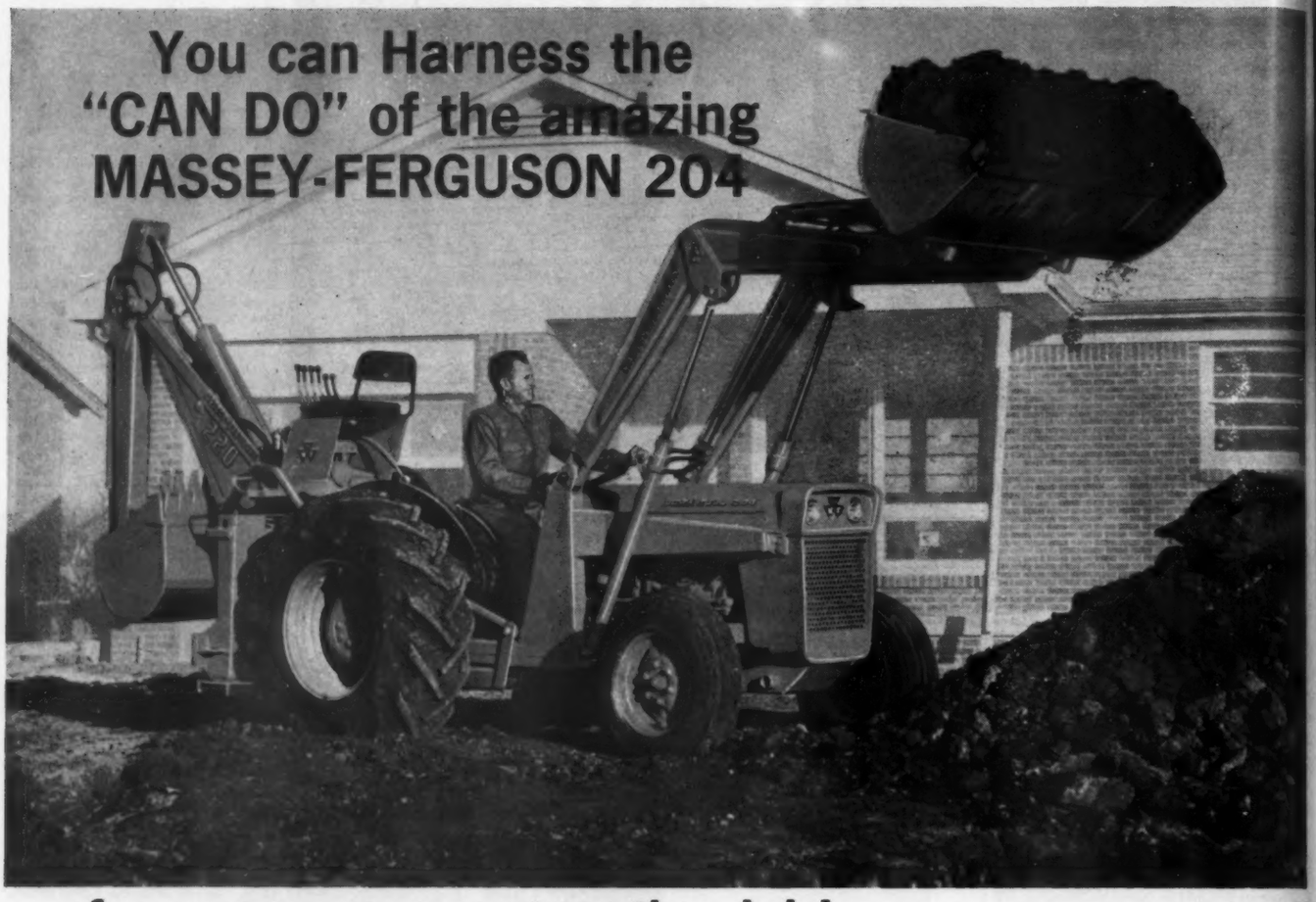
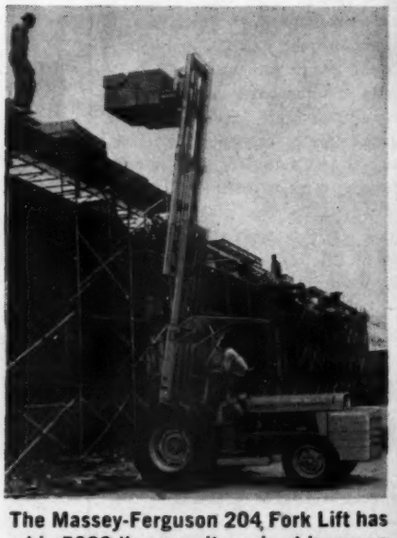


for your own construction job!

FEATURING INSTANT REVERSE

The 204 stands tall and proud on an enviable record of "HAVE DONE." Here is a machine that's tough and powerful yet engineered for quick response and easy maneuverability. Once you know the "well-oiled" almost effortless movement of Instant Reverse, you'll be saying "MUST HAVE"! This M-F torque converter system enables the 204 to move swiftly and easily between load and dump. Result — more efficiency — more work done with less operator exertion — for there is no shifting . . . no clutching . . . no levers to pull. Just a touch of the toe changes the direction of travel — one pedal to go forward; another to go reverse. And consider the much greater freedom afforded the operator to manipulate his loading or digging controls! Result — still more efficiency!

Contractors appreciate the agility and speed of the rugged 204 as it moves in close, operates in congested areas. The marvelously versatile 204 above, and the many other Massey-Ferguson Industrial units, such as the M-F Fork Lift below can speed construction from cornerstone to rafter with their power-matched attachments — loaders, backhoes, blades, scrapers, material buckets, block tines, and others.



The Massey-Ferguson 204 Fork Lift has a big 5000-lb. capacity — is at home on paved or rough, soft unpaved areas — is equipped with Instant Reverse. The 20′ extension above is just one of a wide range of attachments to increase the 204's versatility.

Why Wait? — Set a Date — We'll Demonstrate!

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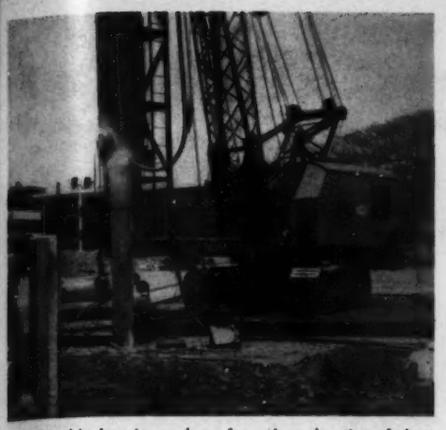


Questionable bearing value of coral at the site of the Market Building in the Waikiki area makes it necessary to put piling down as deep as 218 feet. First, a 16-inch octagonal prestressed pile, 55 feet long, is driven. A 6-foot steel sleeve, with a stop that keeps it from slipping down more than 3 feet, is placed over the end of the pile. The driver then picks up another prestressed pile and, with a few blows, seats it firmly against the preceding pile.

(Continued from page 37)

in the field as they were driven.

The 16-inch octagonal prestressed-concrete piles were cast in 55-foot lengths in the plant of the Concrete Engineering Co., Honolulu, and delivered to the job site by truck-trailers. A small crane unloaded and stockpiled the 6.5-ton units and moved them up to the driver as required.

For driving, Oahu Construction used a Northwest Model 78 crawler crane fitted with 90-foot hinged leads and carrying a McKiernan-Terry S-8 hammer. Two Gardner-Denver 500-cfm compressors supplied air to the hammer for the driving.

When a 55-foot section had been driven down through the hard lenses of coral interspersed with softer materials so that it projected just a few feet out of the ground, the splice was made. A 6-foot-long sleeve of ¼-inch steel was slipped over the top of the pile. The sleeve has a stop that prevents it going more than 3 feet over the pile. The driver then picked up another 55-foot length of piling and inserted it into the steel sleeve. The pile was dropped into the sleeve, and the first few blows seated it firmly against the first pile, separated by a 3-layer lead sheet cushion, ⅛ inch thick.

This splice was completed in a very few minutes, and driving was resumed immediately. Some of the piles went down as much as 218 feet, which meant that four of the 55-foot lengths had to be spliced together with three of the "can" splices.

Four-story column steel reduces splices

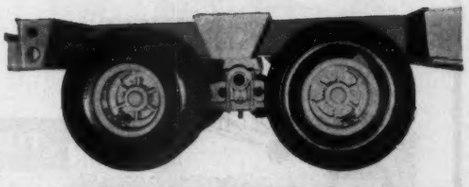
Extremely high land values in Hawaii created by a scarcity of usable property have led to the construction of many tall buildings with small ground areas. To develop the resistance to lateral forces such as earthquake shock, as required by the building code, these structures must have

(Continued on next page)

New 1960 Fruehauf Carryalls Are Stronger, Weigh Less!

The new 1960 Fruehauf Carryall line offers heavy-equipment haulers a completely new concept in carryall design. Strength is concentrated along two extra-rugged beams on the *outside* where most loads are normally concentrated. This new concept in carryall design completely eliminates two unneeded *interior* beams to reduce weight, increase overall resistance to operational damage. New wide frame design reduces carryall length by 18″, increasing maneuverability in tight spots. Floored loading area forward of drop, on all models, is increased by a full 68 square feet for greater load carrying capacity.

The new 1960 Carryall line is available in 20, 25, and 35 ton capacities, in both level and drop deck models for over-and-off road transport. See the new Fruehauf Carryalls at your Fruehauf Branch today.



Neway Tandem gives greater stability. Combination spring-walking beam gives unloaded carryalls an easier ride. When unit is loaded springs make contact with the beam so that suspension functions as a Walking Beam Tandem.

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For more facts on insert, use Request Card at page 18 and circle No. 275

Heavy reinforcing for the 25-story Beach Park Apartments is set up through four floors when footings are placed. Timber bracing is bolted to the steel. The number of heavy bars in the lower floor columns required for resistance to lateral forces—including quakes—makes normal lap splices impractical. The Case 320 is excavating for footings for the low section outside the tower portion.

(Continued from preceding page)

very heavily reinforced columns, especially in the lower floors.

An example is the 25-story Beach Park Apartments, overlooking Waikiki Beach, which is currently being built by the Pacific Construction Co., Ltd., for Thos. B. Bourne Associates, Inc., with Alfred A. Yee & Associates serving as structural consultants.

The large numbers of heavy bars in the lower-floor columns made it impossible to use normal lap splices and still leave room for the concrete. Butt welding of the bars at each floor was considered, but this was costly. When Alfred Yee suggested setting up four floors of column steel at a time the concrete was placed for the footings, the contractor vetoed the idea as impractical. But when Yee suggested a relatively simple bracing system for holding the steel erect and in place, the contractor agreed to try it.

Consequently, the column steel was ordered out in 40-foot lengths. The spirals were installed, and the tie cages were set in their places by a crane. As they were set, the timber bracing members were bolted to the column steel. This bracing system was designed so as not to interfere with the forming or concrete placement as the work progressed. When the steel had all been set, the site looked like a gigantic pincushion.

The footings were poured to embed the lower 3 feet of the bars, leaving the steel standing 37 feet in the air. This height carries it through the third-floor level to the fourth floor. From this point up, the column steel was set in 2-story lifts with standard laps, since the bars get progressively smaller as the building rises.

The structure is of flat-plate construction with cantilevered balconies on each floor. A low section in front of the apartment tower will house stores. This has a thin corrugated concrete-shell roof. The skewed corrugations on random columns provide a very unusual appearance, but they created some difficult design problems. The contractor formed the corrugations with Masonite over plywood segments. At the rear of the building is a 6-story parking garage.

Apartment building is constructed by slip forming

Building a complete 11-story apartment building with slip forms introduced a new method to Honolulu construction. This had been done at least once before on the mainland, but the Dewey Way Apartments near the Hawaiian Village Hotel in the Waikiki area was the first in Hawaii.

The two end walls, three intermediate partition walls, and the accompanying columns, together with the elevator shaft and stair wells,

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DROP FORGED STEEL CLIP FOR FASTENING WIRE ROPE

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FLIP!...

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...IT'S BRACED, READY FOR WORK!

GOES UP IN 2½ MINUTES—A ONE-MAN JOB!

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Aluminum rails telescope, provide unloading heights from 13 to 40 feet. Has 7½ hp. gasoline engine and centrifugal-type governing downbrake (1000 lb. capacity) having 125 fpm. line speed. Remote control and adjustable limit stops standard. Side-loading platform is 34 x 60 inches to handle most loads. Also with reversible electric motor (500 lb. capacity). Write now for details—production is limited.

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On the go to cut concrete expansion joints and fill with tar–this GMC steel tilt-cab is loaded to full 23,000 lbs. GVW. New L4000 Series have unsurpassed flexibility. For example: you have a choice of 20 axle-transmission combinations with standard 150 hp. and optional 165 hp. or 185 hp. V-6 engines. Vacuum or full air brakes available. Easy-driving independent front suspension with torsion bar springs standard.

NEW GMC TILT-CABS ARE . . .

ASIER TO DRIVE

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Cut service time and costs. Now you can walk right up to the engine with the cab tilted. And with all GMC tilt-cabs, controls are in perfect alignment and adjustment at all times because they are not disconnected –due to the stationary control island.

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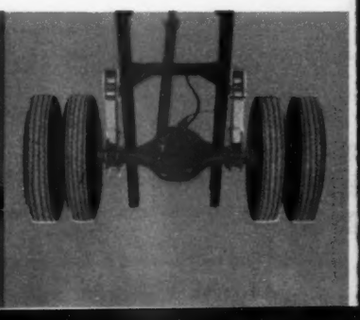
New design frames are stronger and more rigid. New, standard 3-inch wide vari-rate rear springs with built-in radius-rod leaf last longer . . . everything for lasting dependability.



Cut job time, haul bigger loads with new GMC BW5500 Series six wheelers. Join the contractors that are profiting from the superior performance of the exclusive 401 cubic-inch V-6 engine, larger clutches, better weight distribution with 90" BBC . . . all the advanced features that have made this the most-wanted GMC construction truck. Other models to 120,000 lbs. GCW with Twin-Six gas and V-6 diesel power.

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SEE WHY CONTRACTOR FAVORITE GMCs ARE YOUR BEST TRUCK VALUES, TOO

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EXCLUSIVE V-6 ENDURANCE

Now you have a potential of up to 200,000 miles without a major overhaul, with the proper maintenance and use. This is backed up by grueling, accurate engineering tests.

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With GMC Power-Mated drive trains, every component from the larger clutch to the high-strength axle shafts is properly sized and geared for your specific construction haul . . . balanced and built for increased durability.

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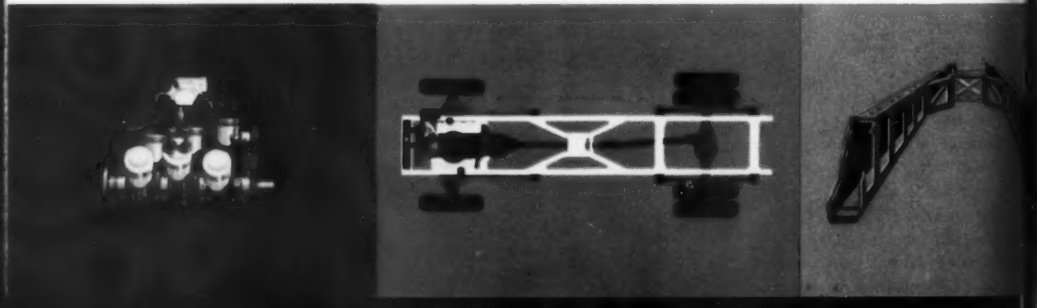

Two end walls, three partition walls, and columns, elevator shaft, and stair wells for the Dewey Way Apart-

ments are built with the slip-form method. The 40-inch-deep forms are of ¾-inch plywood braced by wood trusses. B. M. Heede hydrau-

lic jacks raise the form on steel jacking yokes at 1 to 18 inches per hour.

were all cast simultaneously in the slip form. The front and back walls are metal window walls.

Inserts placed in the walls at the floor levels were knocked out later to make room for the reinforcing bars for the flat slab floors, which were cast after the slip form moved ahead.

The structure measures 50×80 feet in plan and has five apartments per floor. The first floor will be used for parking. The owner-contractor is Joseph Pao and James Wong. Architect was Park & Yee, Ltd. The building was originally designed for conventional forming and concrete placement. The design was modified by the architect to permit construction by the slip-form method.

The slip form, which started at the second floor, consisted of 40-inch-deep forms of ¾-inch exterior plywood braced with wood trusses and raised on steel jacking yokes. B. M. Heede hydraulic jacks supplied by B. M. Heede Hawaii, Ltd., raised the form on the 1-inch jacking rods. The 72 jacks on the form were operated from a single hydraulic pump and control. The form was raised in 1-inch increments, rising from 1 to 18 inches per hour.

The concrete was supplied by the Pacific Concrete & Rock Co. and delivered in transit mixers that discharged directly into buggies on the platform of a Buck hoisting tower. The hoist raised the buggies to the form, and workmen wheeled the concrete to the placement areas. The mix was carefully vibrated into the forms with Thor electric vibrators. One floor

(Continued on next page)

Concrete, placed by crews using hand-wheeled buggies, is vibrated with Thor electric vibrators.

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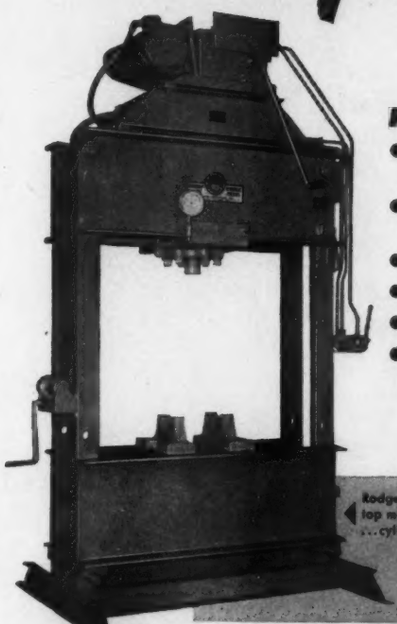

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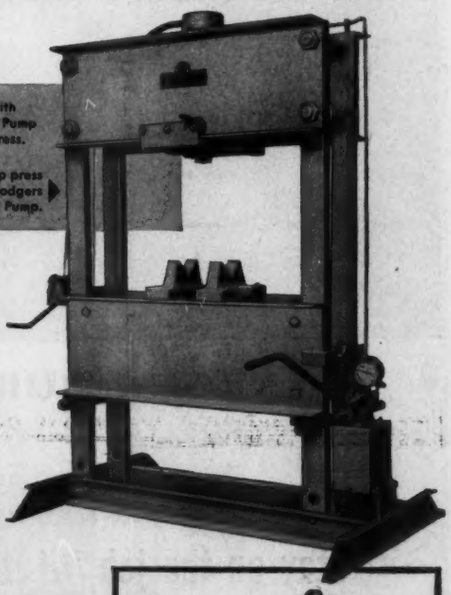
Rodgers 100 ton shop press with top mounted Greenlee Power Pump . . . cylinder travels width of press.

Rodgers 100 ton shop press with Rodgers 2 speed Hand Pump.



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Rodgers Shop Presses are designed and built for the most versatile service, and longest trouble-free life. In the shop they handle hundreds of diversified jobs . . . pressing, bending, straightening, assembling. For field work the Rodgers cylinder and pump are easily removed from the press, making an ideal portable power unit for jacking, lifting, heavy shaft removal and similar work.

Rodgers produces the most complete line of shop presses available—capacities from 60 to 400 tons—in varied standard models with power pumps, top mounted or placed at the side—or hand pumps with 2 or 3 speeds.

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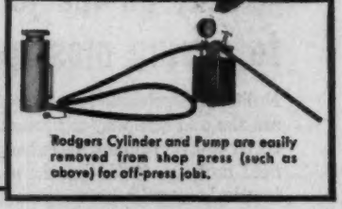
It gives useful information and complete specifications.



Rodgers Cylinder and Pump are easily removed from shop press (such as above) for off-press jobs.

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Concrete is discharged from a Smith mixer on a GMC truck to buggies that are raised to the upper floors by a Buck hoisting tower.

(Continued from preceding page)

height was completed every other d

As soon as the slip form was on its way, another crew began forming the 5-inch concrete slab floors. The C inserts were knocked out, leaving room for the reinforcing bars to be extended through the interior walls for continuity. The plywood deck forms were supported on adjustable steel shores.

Using this method, the contractor expected to cut more than a month from the construction schedule and to save an estimated 10 per cent of the cost.

The superintendent for the owner-contractor was M. Uda. The field engineer for B. M. Heede on the slip forming was Lennart Anderson.

Tower crane climbs to serve twin buildings

A Model 50HB Universal Tower-crane, the first to be used in Hawaii, attracted lots of attention as it handled form materials, reinforcing steel, and concrete for the construction of twin 17-story additions to the Hawaiian Village Hotel on Waikiki Beach in Honolulu. Yet its quiet, all-electric operation did not disturb the guests in the hotel next door.

The tower crane operated in a narrow space between the two buildings, serving both structures with its 100-foot boom. Pulling itself up by the bootstraps, it climbed with the building all the way to the top.

The elevator shafts and stair wells of the structures were built by the slip-form method, rising to the height of the 17 stories far in advance of the construction of the rest of the building.

The Hawaiian Village is owned by the Kaiser-Burns Development Corp., and this unit of the Kaiser enterprises is its own general contractor for the construction of the 428-room hotel addition.

The structure is being formed and shored with timber faced with ¾-

The first Universal Towercrane to work in Hawaii uses a 100-foot boom to handle materials, reinforcing, and concrete for the twin 17-story additions to the Hawaiian Village Hotel. The crane uses a ¾-yard bucket to place concrete.

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The slip-forming method was used to build elevator shafts and stair wells of the twin additions. W. L. Stevens, left, superintendent, and C. L. Hansen of Hansen-Kashner Co., the slip-forming subcontractor, check on attachment of a Pneumatic Jacks, Inc., jack to the timber jacking yoke.

(Continued from preceding page)

inch Plyform. Enough forming is being used to form two floors of both buildings at the same time. While this provides only about eight re-uses of the forms, it speeds the construction operation, and this is of vital importance. Work on the job got under way March 1, 1960, and 250 of the rooms are scheduled for occupancy by October 1. The buildings are expected to be completed by December 1, 1960, only 10 months after the start of construction.

The tower crane worked well in this operation. Its long boom reached a large part of the building area. Its ability to handle loads up to 3,680 pounds at the 100-foot radius enabled it to place concrete with a ¾-yard bucket. Lorain and Bay City 25-ton truck cranes assisted during some of the busiest phases of construction.

The slip forming was done under a subcontract by the Hansen-Kashner Co., Fresno, Calif., using Pneumatic Jacks, Inc., air-powered jacks. This was not a continuous slip-form operation. The crew worked only 8 hours per day, leaving a construction joint at the end of the day's work.

The superintendent of the job for Kaiser-Burns Development Corp. was N. Murakawa. On the slip-form operation, W. L. Stevens was superintendent for Hansen-Kashner. C. L. Hansen was on the site most of the time while this operation was going on.

The floors were formed with Acrow adjustable steel shores, standard steel bar joists, and ⅝-inch plywood decking. Every bit of the material was salvaged in the stripping and re-used on the succeeding floors. Since Pacific had enough materials on the job to form two floors at a time, the next floor could always be formed without waiting for the one just poured to be stripped.

In addition to the spectacularly long boom of the Lorain truck crane, a Buck hoist reached up 110 feet beside the building to raise materials for the electrical and mechanical work and for the interior finishing. The men used the stairs.

The crane was rented from Community Equipment, Inc., Honolulu. The superintendent for Pacific Construction was Barney Fujikawa.

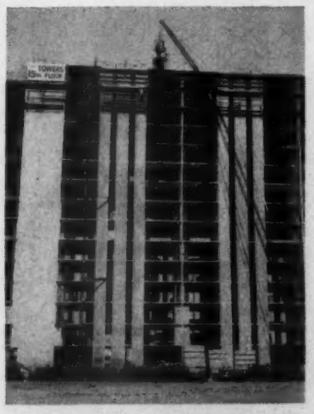
(Continued on next page)

Long boom helps crane on building

Using 125 feet of boom and a 40-foot jib for a total reach of 165 feet, a Lorain 30-ton motor crane was able to hoist the concrete clear to the top of the 15-story Atkinson Towers building in Honolulu. This crane, using a Gar-Bro 1-yard bucket, raised all of the concrete for the frame of the structure, which was completed at fast pace.

Located at 419 Atkinson Drive, the 112-apartment structure overlooks Ala Moana Park and beach.

Although the contractor, Pacific Construction Co., Ltd., Honolulu, did not use any special methods or aids such as slip forming or precasting, it completed the building in less than 10 months. In the current boom in Hawaii, this seems to be about par, regardless of the size, cost, design, or type of building.

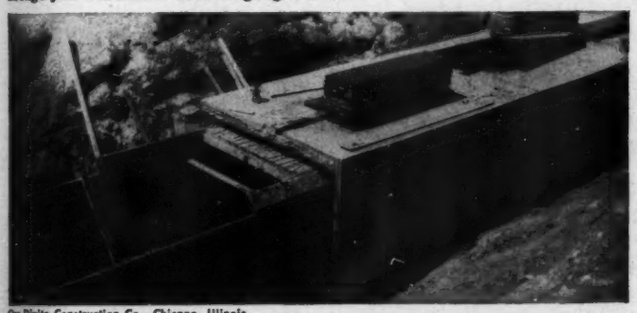


Using a 125-foot boom and 40-foot jib, a Lorain 30-ton truck crane raises concrete to the top of the 15-story Atkinson Towers apartment building in Honolulu. A Buck 110-foot hoisting tower is used to deliver materials for tradesmen working on the building.

BETTER ROADS with Symons Forms

Tom and Blank, Inc., Michigan City, Indiana

Bridge . . . Symons standard prefab panels were ganged for arched girders on bridge job. Contractor used 28 ganged sections.



Cir-Divito Construction Co., Chicago, Illinois

Culvert . . . Walls and slabs varied in thickness from 10 to 18". Outside height was 10½' and inside dimensions were 8½' wide by 7½' high.

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Prestressed-concrete piles, slip-formed elevator shafts and stair wells, conventional concrete work, and prestressed, precast beams are construction features of the Princess Kaiulani Hotel addition. Curved lanai slabs were formed with lumber and plywood and shored with adjustable steel shores.

Beams, floor slabs precast, prestressed for hotel addition

An unusual combination of slip-form, conventional cast-in-place, and precast prestressed-concrete construction was employed by general contractor Haas & Haynie Corp., San Francisco, in the construction of an 11-story addition to the Princess Kaiulani Hotel in Honolulu.

The contractor started by driving 10-inch-square prestressed-concrete piles to an average depth of 125 feet for the foundations. Then, using B. M. Heede hydraulic jacks, the crews slip-formed the triple elevator shaft and the stair wells to the full height of the building.

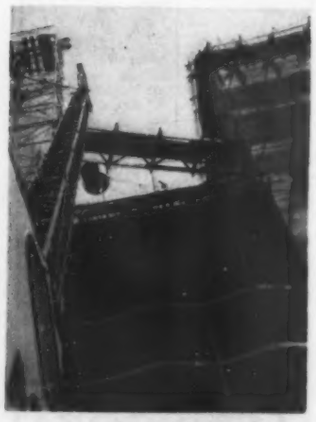
The columns were formed, one floor at a time, with conventional forms, and concrete placement was handled with cranes and buckets. A P&H 40-ton truck crane and a Bay City 25-ton truck crane shared the concrete placement, as well as the setting of the precast members and other lifting chores. For the top floors, these cranes were fitted with booms and jibs totaling 125 feet or more. The long booms and jibs enabled the cranes to spot the buckets right over the columns, so that the concrete could be placed without rehandling.

With the columns cast, the 10×16-inch rectangular prestressed, precast beams were set in place by the cranes. These beams span 24 feet between the columns.

The floor-slab sections were then set in place on the beams. These prestressed slab sections span 15 and 20 feet between the precast beams. The individual slabs, 4 feet wide, were set side by side to form the entire floor. These slabs were 3 inches thick and were reinforced with ⅜-inch pretensioned strands at 6-inch centers. The precast members were all supplied by the Concrete Engineering Co., Honolulu, and were set in place by the P&H crane directly from the truck that delivered them to the site.

Undulating ¼-inch bars were embedded in the top surface of the precast slabs, half embedded in the concrete and half projecting. These served to anchor the 3-inch-thick concrete slab, which was cast in place on top of the precast slabs. These projecting bars also served as chairs to support the reinforcing steel for the slab.

Cantilevered balconies or lanais on each floor on both the front and rear faces of the building were formed with lumber and plywood forms



A Bay City crane with 125 feet of boom and jib spots a bucket of concrete in a tight area. At right is the slip-formed elevator shaft.

BEST STABILITY IN THE BUSINESS

The Allis-Chalmers TL-20 gives you a higher wheelbase to length ratio for added fore and aft stability. You carry big loads at high speeds with minimum spillage.

The 130-hp Allis-Chalmers TL-20 tractor loader gives you the kind of stability you need to move big loads fast over the roughest terrain . . . without tipping or spilling the load. Long 7-ft, 9-in. wheelbase is 43 percent of over-all length with bucket at carry. This gives the TL-20 a higher wheelbase to length ratio than other loaders of this size.

Extra stability is just one reason why you get extra production with the 11½-ton TL-20. Other profit-producing advantages are: *Single-lever speed and direction control; pin-connected axles* that eliminate shifting and rolling under load; *5-way hydraulic filtering* that provides maximum protection; *extra-long reach* for faster and easier dumping; and *well-located dump cylinders* that are up and out of dirt for better performance . . . longer life.

Ask your Allis-Chalmers dealer about the complete line of tractor loaders—5 models—with buckets from 1 to 5 cu yd, 76.5 to 130 horsepower. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

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shored with adjustable steel shores, and cast in place. The only forming required in the building framework was for these lanai floors and the columns.

To raise the concrete for casting the floor and lanai slabs, Haas & Haynie used an American Tubular steel tower fitted with a 1-yard skip and a 1¼-yard hopper. The concrete was wheeled from the hopper in buggies. THE END

A committee has been formed by the International Road Federatiotn to translate traffic-engineering texts from English into Spanish.

Farrell-Cheek celebrates its 50th anniversary

■ The Farrell-Cheek Steel Co., alloy and carbon-steel casting firm of Sandusky, Ohio, is celebrating its 50th anniversary. The firm, which opened with 10,000 square feet of space and 20 workers, today has 440 employees and buildings enclosing 250,000 square feet. It specializes in castings ranging from ¼ pound to 3,500 pounds. Some of its products were used on the nuclear submarine Polaris and the Thor missile.

An expansion and modernization program is now in progress. A line of gears, wheels, and sheaves has been introduced, but the firm's primary function is job casting.

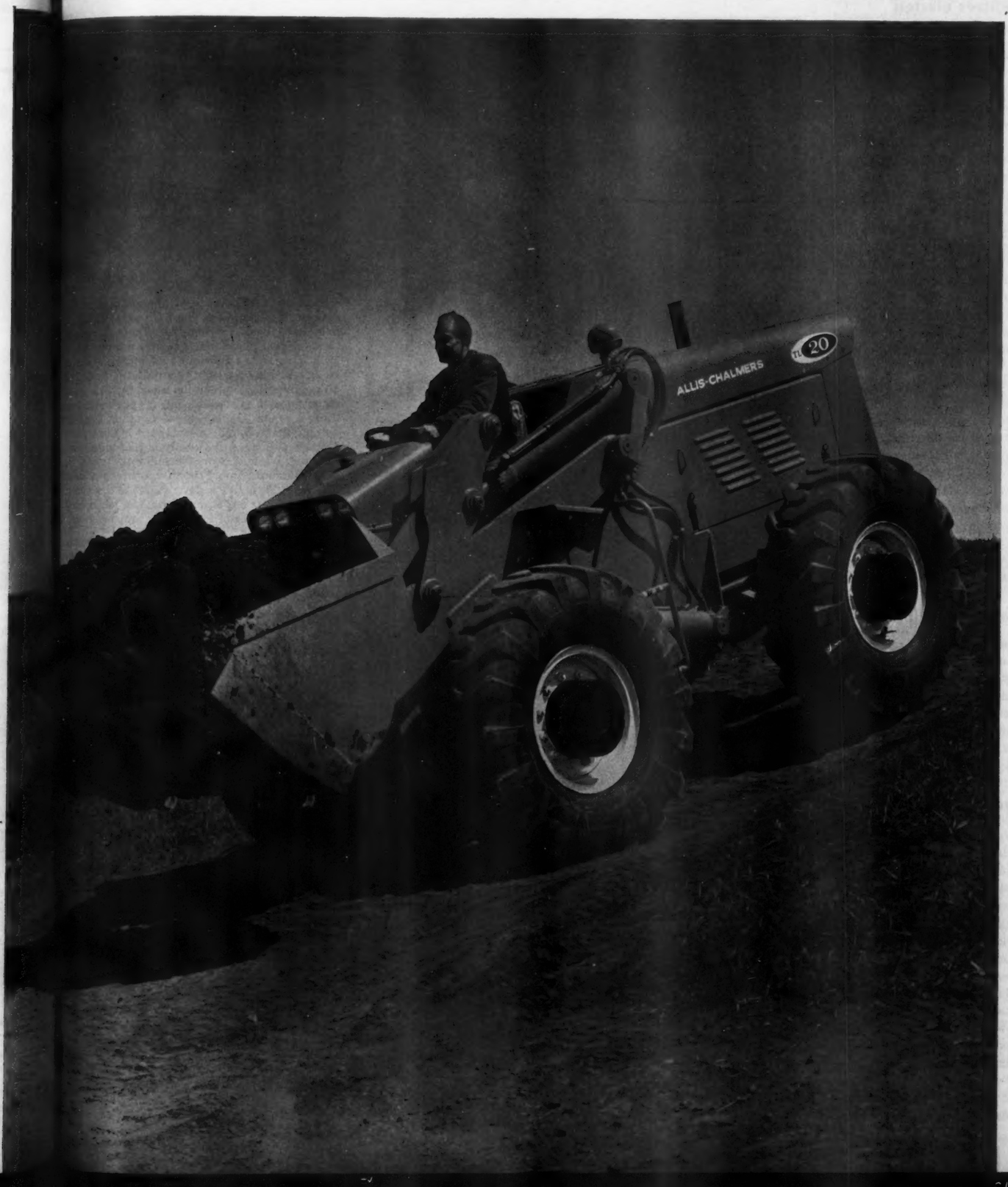
Two districts of Corps merge in Tennessee

■ The Tullahoma District of the U. S. Army Corps of Engineers was recently absorbed into the Nashville District. Both are in Tennessee. Established in 1949 to build the Arnold Engineering Development Center, an experimental and research station, the Tullahoma District has been responsible for the expenditure of nearly $180 million on this center.

Completion of a major portion of the planned work has made the consolidation advisable. An area office will be maintained at Tullahoma with Lt. Col. William C. Langley in charge as area engineer.

Goodrich awards contract

■ The first construction contract for a new tire plant near Fort Wayne, Ind., has been awarded to the MacDonald Construction Co., St. Louis, Mo., by the B. F. Goodrich Co., Akron, Ohio. The contract covers site preparation work, and the first phase will be completed by October 1.



Names in the News

Earl H. Norem, left, chairman of the board, and Frank C. Schmitt, executive vice president of Vermilya-Brown Co.

Two officers elected by Vermilya-Brown

The board of directors of Vermilya-Brown Co., Inc., New York, N. Y., has elected Earl H. Norem chairman of the board and Frank C. Schmitt executive vice president.

Norem, previously executive vice president and treasurer, has been associated with the 106-year-old building firm since 1911. Among the building projects for which he was officer-in-charge were the Prudential Insurance Co. home-office building in Newark, N. J.; the Federal Reserve Bank of New York; and the New York Telephone Co. home-office building in New York City. He was construction consultant to the War Production Board during World War II.

Schmitt has been with Raymond International for the past 14 years. During forty years' experience in various phases of construction throughout the world, he has supervised such projects as the Aiea Naval Hospital and housing in Hawaii; hospital and service buildings for Creole Petroleum Co., Maracaibo, Venezuela; military bases in Spain for the U.S. Air Force; and 16 buildings for Brasilia, the new capital of Brazil.

Engineer group inducts

New officers of the New York State Society of Professional Engineers are Victor E. Hall, president; Charles A. Hescheles, first vice president; and H. Dale Bossert, second vice president. The society has appointed Sydney S. Baron & Co., Inc., New York, N. Y., as public relations counsel.

International welders name vice president

Fred L. Plummer has been elected international vice president of the International Institute of Welding by the governing council of the group. He is national secretary of the American Welding Society, and chairman of the American council, which directs the activities of the International Institute in this country.

The members of IIW consist of 27 nations which exchange technical information and meet for discussion. Their aim is to promote the development of welding processes and to aid in the formulation of international standards.

NCA elects new veep

The National Constructors Association, Washington, D. C., has elected a new vice president, H. E. Lore, manager of the engineering and construction department of Dravo Corp., Pittsburgh, to succeed R. L. Cashen, who died recently. R. W. Olmstead, president of The H. K. Ferguson Co., Cleveland, was elected a member of the association's 7-man executive committee.

NCA is a group of firms that specialize in the design and erection of industrial facilities. It is devoted to the improvement of labor relations in this field, and to developing cost-reduction and safety programs.

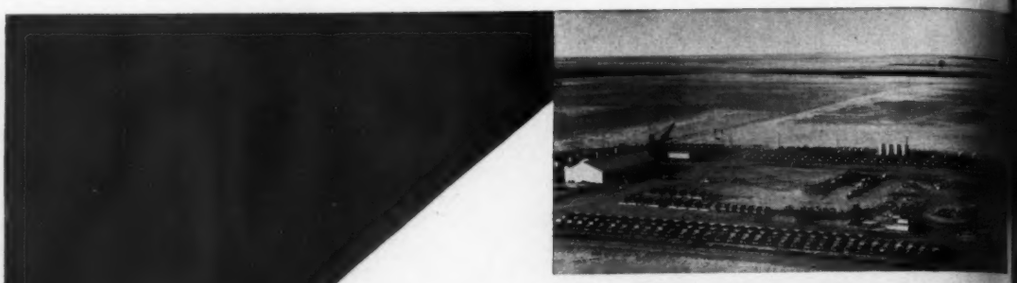
Award to engineer

Ralph DeSimone, construction consultant and retired president of the Merritt-Chapman & Scott Corp., New York City, has been awarded the New York University Alumni Meritorious Service Medallion. He is a 1914 graduate of the university's College of Engineering.

Walter F. Oleksiak, vice president of construction, United Engineers & Constructors, Inc.

United Engineers names manager; creates post

United Engineers & Constructors, Inc., Philadelphia, has elected Walter F. Oleksiak to fill the newly created post of vice president of construction



Multi-million dollar picture. Here is part of Western's equipment lined up for inspection at Oahe Dam. Photo shows 8 trucks, 23 bulldozers and crawler pieces and 9 scrapers.

2 ways Standard Oil helps Western Contracting Corporation save on Oahe Dam job

In eight years on project, 10 million gallons of diesel fuel and gasoline have been delivered on time and when needed

Saving No. 1 F. L. "Red" Napple, Standard Oil staff engineer, and Standard Oil agent Bob Friman have been serving Western on the Oahe Dam project since the first dirt was moved in 1952. This means continuity of service that can be invaluable to a contractor. Red Napple has an engineering degree plus more than 13 years' experience in just this kind of work. Western thus has the equivalent of another engineer helping them. Napple is located at Aberdeen and Friman at Pierre, both only a few miles from the job. Western works around the clock. So does Standard. Bob Friman and his men make deliveries 24 hours a day, winter and summer. Western never has equipment down while waiting for deliveries of fuels, lubricants or greases.

Saving No. 2 Western uses only quality products —Standard's Diesel Fuel, STANDARD RED CROWN

With the company since 1941, he has been construction manager since 1958.

Thomas M. Dahl, previously new-business representative in the midwest region, has been appointed manager of the firm's Chicago office. He will be responsible for new-business activity in Ohio, Kentucky, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, and Missouri.

Ford, Bacon & Davis news

Charles C. Whittelsey, president of Ford, Bacon & Davis, Inc., New York, N. Y., was presented with the honorary degree of Doctor of Engineering by the School of Mines and Metallurgy of the University of Missouri, of which he is an alumnus.

Albert T. Peagan has joined the staff of the consulting engineering firm. His 30 years' experience with railroads will be applied to a wide range of transportation problems.

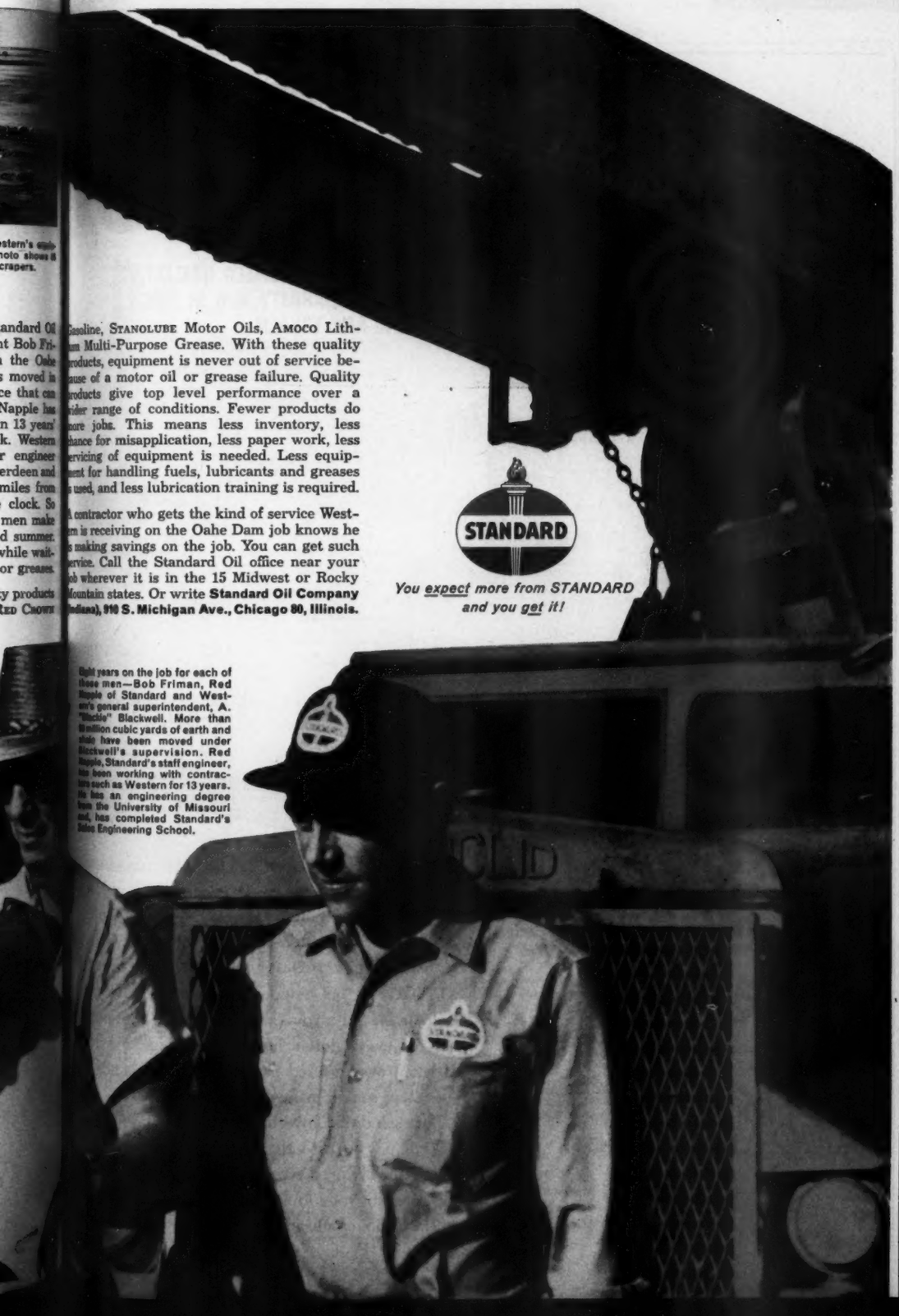
Daniel opens division

Daniel Construction Co. has opened a new North Carolina division with an office in Greensboro. Eldon F. Matteson has been appointed division manager.

PCA assigns engineers

George K. McCord has been appointed Wisconsin district engineer for the Portland Cement Association, Chicago, Ill. At headquarters in Milwaukee he succeeds W. D. Kimmel, who has retired after more than 25 years with PCA.

Robert H. Lochow has been named district engineer for New Jersey and is working out of Trenton. His former post as district engineer for Washington, Oregon, and northern Idaho is filled by Charles H. Knight, Jr., who will have headquarters in Seattle.



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A contractor who gets the kind of service Western is receiving on the Oahe Dam job knows he is making savings on the job. You can get such service. Call the Standard Oil office near your job wherever it is in the 15 Midwest or Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Illinois.**

Eight years on the job for each of those men—Bob Friman, Red Nipple of Standard and Western's general superintendent, A. "Blackie" Blackwell. More than 60 million cubic yards of earth and shale have been moved under Blackwell's supervision. Red Nipple, Standard's staff engineer, has been working with contractors such as Western for 13 years. He has an engineering degree from the University of Missouri and, has completed Standard's Sales Engineering School.

William J. Pickett, secretary of the William L. Crow Construction Co.

Crow Construction elects

William J. Pickett has been elected secretary of the William L. Crow Construction Co., New York, N. Y. For two and one-half years he has been the firm's chief estimator and, since March, has been director of engineering in the home office. He will continue active work in the field as a project engineer.

SAME installs new slate

The Society of American Military Engineers, Washington, D. C., installed newly elected officers and directors at its 40th annual meeting. The new president is Maj. Gen. Augustus M. Minton, Director of Civil Engineering, U. S. Air Force, Washington. Col. Walker L. Cisler is first vice president. New directors are Capt. Joseph C. Luppens, Lt. Col. Aleck F. MacDonald, Rear Adm. Robert H. Meade, and Comdr. Spencer R. Smith.

The following directors were re-elected for another 3-year term: Col. John A. Chambers, Rear Adm. Leo O. Colbert, Col. Lester L. Lessig, Rear Adm. H. Arnold Karo, Maj. Gen. George J. Nold, and Rear Adm. Cushing Phillips.

Bruce D. Bennett, president of the Wire Reinforcement Institute.

Wire-fabric group selects president

The Wire Reinforcement Institute, Washington, D. C., has named as president Bruce D. Bennett, manager of construction-material sales for American Steel & Wire Division, United States Steel. The member firms of the trade association are responsible for over 90 per cent of the welded-wire fabric produced in the United States and Canada.

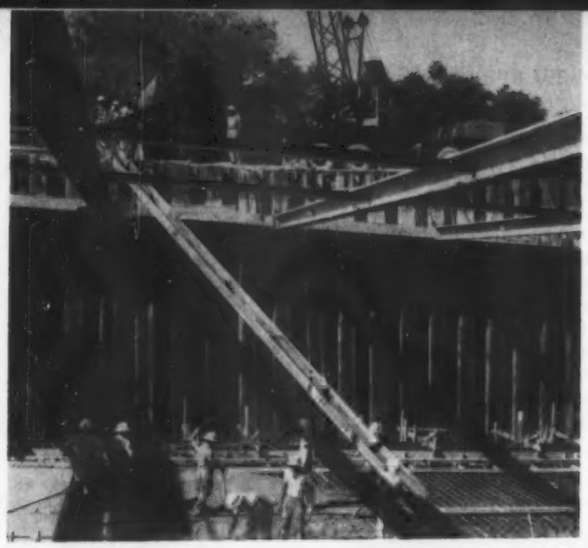
Michigan engineers elect new officers

The Michigan Engineering Society at its 80th annual meeting elected the following slate of officers: Dudley Newton, president; Russell E. Harrison, vice president; Alfred K. Martin, secretary; William C. Gibson, treasurer; and Wardwell B. Montgomery, director at large.

The society presented honorary membership certificates to Perry A. Fellows, John Hepler, and Lloyd B. Reid.

◀ For more facts, use Request Card at page 18 and circle No. 281

Rebars grouted



A long chute spotted by a Lorain truck crane, and fitted with baffles to prevent segregation, delivers concrete to crews working on the floor of the tunnel across New River in Fort Lauderdale, Fla. The cofferdam, of L. B. Foster MZ-38 sheet piling, is sealed with an anchored tremie mat 4 feet thick. Reinforcing bars, grouted into the riverbed to anchor the seal, overcame the hydrostatic uplift of 50 feet allowing this thin seal—instead of one 28 feet thick—to be used.

Finding a way to overcome the 50 feet of hydrostatic uplift that would act on the cofferdam tremie seal was the biggest problem on the New River tunnel project in Fort Lauderdale, Fla. The tunnel, which will replace a 30-year-old bascule-type span carrying U. S. 1 across the river, has now emerged from this unique preparatory phase of work, which included the multistage cofferdam and the anchoring of the thin tremie seal.

Thorington Construction Co., Richmond, Va., contractor on the $6½ million project was faced with two alternate designs for the cut-and-cover tunnel. The first called for a system of dewatering by wellpoints. The second provided for a cofferdam that would be sealed with an anchored tremie mat 4 feet thick. Under conventional cofferdam methods, a gravity tremie seal 28 feet thick would have been required to offset the hydrostatic pressures. The design of the mat anchorage and the method of installation were left up to the contractor.

The entire subsurface of the Fort Lauderdale area consists of alternat-

The job of driving the anchor rods that hold down the thin tremie seal for the cofferdam—despite the 50-foot hydrostatic uplift—was handled by this tall frame that rides tracks laid along the berm of the cofferdam.

Ground-water seepage into the cofferdam is directed to a sump by the two pumps at lower right. The Fairbanks Morse deep-well pump, upper left, removes the flow. Wedges driven between joints of interlocking sheeting minimize seepage.

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verbed anchor tremie seal

ing layers of porous limestone and sand. The state road department ran a preliminary test that involved inserting anchor rods—No. 11 reinforcing bars—into the underlying rock stratum. A few test rods were grouted 10 feet in the rock stratum and subjected to a tensile load. These tensile test loadings resulted in failure of the bar without it being pulled out of the rock.

Drilling sublet

Thorington built a drill barge to permit a subcontractor to drill four anchor-rod locations simultaneously. The subcontractor drilled the underlying rock and filled the holes with grout; the No. 11 anchor rods were then inserted. After installing a number of anchor rods, spaced at varying intervals according to the uplift pressures to be balanced, the contractor performed pull tests of 65,000 pounds per rod. The results were far from satisfactory. Over 42 per cent of the rods tested failed to withstand the test loading.

The subcontractor reported that, during the drilling of the grout holes, it was evident that the rock layers were very uneven and that the anchor-rod failures occurred where the rods had not been properly grouted. In many cases, sand had filled the drilled holes and prevented suitable grouting. Because of this, Thorington had to discard this method of anchoring the rods.

A workable solution was found by developing a gravity anchor based on the theory of a tension pile. By structurally tying the weight of the concrete tremie seal with the weight of a varying depth of sand—by means of the anchor rods—the uplift pressure acting against the bottom of the tremie seal could be counteracted by the composite weight of tremie and sand.

Calculate anchor length

To simplify computations, the pressure bulb at the base of an anchor rod was assumed to have an inverted conical shape. Another assumption was—as in the case of a pile cluster under a foundation—that an individual anchor rod would have a conical shape only until it meets the influence cones of adjacent anchors. The weight of the soil above the plane formed by intersection of adjacent cones would overcome the buoyant forces acting on the bottom of the tremie seal.

To determine the exact length of the anchor rod, it was necessary to determine the depth of the water at the anchor location of the tremie bottom. The depth, multiplied by 64 pounds per cubic foot, gave the uplift force per square foot at the bottom of the tremie seal. Since the concrete weighed 130 pounds per cubic foot, 520 pounds per square foot could be subtracted from the hydrostatic pressure, leaving the unbalanced uplift force.

Next, the exact depth of sand and stone had to be determined to counteract this unbalanced uplift. All the underlying material was assumed to be sand; any rock present gave an extra margin of safety. The unit weight of this "homogeneous" soil in water was assumed to be 55 pounds per cubic foot. The unbalanced force at the base of the tremie seal was divided by the weight of the sand to determine the depth of soil required to counterbalance the uplift. Below this depth, the length of the pressure cone was developed. To provide an additional factor of safety, the total depth of the soil and pressure cone was increased by 15 per cent to obtain the exact length of the anchor rod.

Installing anchor rods

Thorington required about 113,520 linear feet of No. 11 reinforcing bars before completing the installation of over 2,000 anchors for the first stage of the tunnel. The entire project required over 4,000 anchors. Laid end to end, they would stretch over 55 miles; total weight of the No. 11 bars came to 750 tons.

The installation procedure started with a McKiernan-Terry 9-B-3 hammer driving a 7-inch-diameter cylindrical pipe casing sealed at the bottom by an expendable ¾-inch steel cap. The cap was held in place during driving by three wires hooked to the pipe and by three stiffened vertical plates welded to the cap to fit inside the base of the pipe.

As the pipe was driven, a head of water was maintained inside the pipe to prevent the fine "sugar" sand from seeping into the casing. The longest

(*Continued on page 56*)

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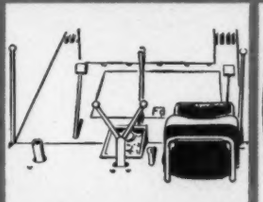

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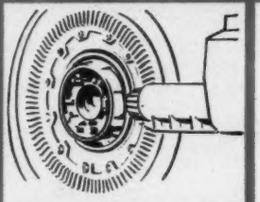

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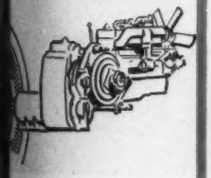

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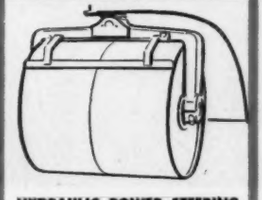
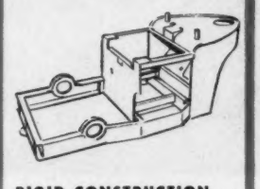


HYDRAULIC POWER STEERING . . Low pressure system permits most accurate control for smooth, close rolling with minimum operator fatigue.



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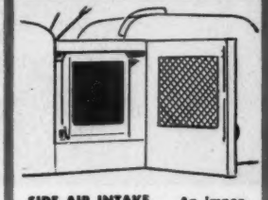

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◄ Using a dragline bucket, a Manitowoc excavates the river bottom between the side walls of the cofferdam. Some of the material is being stockpiled along the far cofferdam wall; a Cat Traxcavator is loading the remainder out to trucks.

One of the interlocking sheet piles is positioned by a barge-mounted derrick crane with help from a man atop the sheet pile. The crane in the background is excavating the area between the cofferdam walls being driven. The cofferdam at right protects the completed section of tunnel. ►

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Get compaction cost-cutting facts from your nearby Lima distributor or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

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(Continued from page 53)

pipe required was 130 feet.

After the pipe had been driven to the desired depth, it was filled with grout by pumping from the bottom up. This displaced any water and sand that seeped into the casing. Following the grouting operation, the exact predetermined length of anchor rod was placed in the casing and dropped down through the grout. Since the No. 11 reinforcing bars were purchased in 40-foot lengths, sections had to be butt-welded to get the required length.

Once the end tip of the anchor rod came to rest on the casing's seal cap, the casing was slowly extracted from the ground. During extraction, the weight of the grout column forced the casing cap off. Each of the anchors was later tested by subjecting it to a 65,000-pound uplift, and the results were excellent. Only nine failures occurred—most of them taking place in the butt welds—and replacement was made. The success of this unique anchoring system was demonstrated during the dewatering of the land and then the river sections of the cofferdam.

Tunnel work

The 800-foot-long tunnel consists of a 2-foot 7-inch-thick floor slab; a 3-foot 4-inch-thick roof slab; two

This Blaw-Knox prefabricated steel form is used to form walls and roof slab. Two sets of the forms are in use, one for each roadway. They ride rails laid on the floor slab of the tunnel.

Crew using Hobart and Lincoln equipment join the steel liner plates over the tremie seal of the cofferdam. The liner will extend up into the side walls of the tunnel. About twenty welding units are on the job.

2-foot 9-inch-thick outside walls; and a 1-foot 8-inch-thick partition wall separating the two 24-foot roadways. The tunnel is 66 feet wide and has a vertical clearance of 14 feet. Before the floor slab is poured, steel liner plates are positioned over the tremie seal and grouted into place. The steel lining is being carried up into the outside walls of the tunnel to assure watertightness.

Two sets of prefabricated Blaw-Knox steel forms, one for each tunnel roadway, are used to handle the forming and concrete placement for the walls and the roof slab. Forms ride on rails laid on the floor slab of each roadway.

Scheduled for completion by February, 1961, the new tunnel will eliminate the traffic bottleneck on U. S. 1 through Fort Lauderdale and will provide smooth sailing for the heavy pleasure-boat traffic using New River.

Personnel

James E. Hood is the project manager and George F. Poland, who was in charge of the design of the anchorage system, is the project engineer for Thorington. Harold Guppy is the north superintendent, and Arthur Shaeffer, the south superintendent for the contractor. E. V. Jones is the resident engineer for Singstad & Baillie, the design consultant for the Florida State Road Department. John Gerren, Jr., is the resident engineer for the state. THE END

Manager for Armco office

■ At the Washington, D. C., office of Armco Drainage & Metal Products, Inc., William E. Harrison has been promoted to the post of manager. He succeeds David H. Henderson, who retired. Harrison was formerly assistant manager. The company is a subsidiary of Armco Steel Corp., Middletown, Ohio.

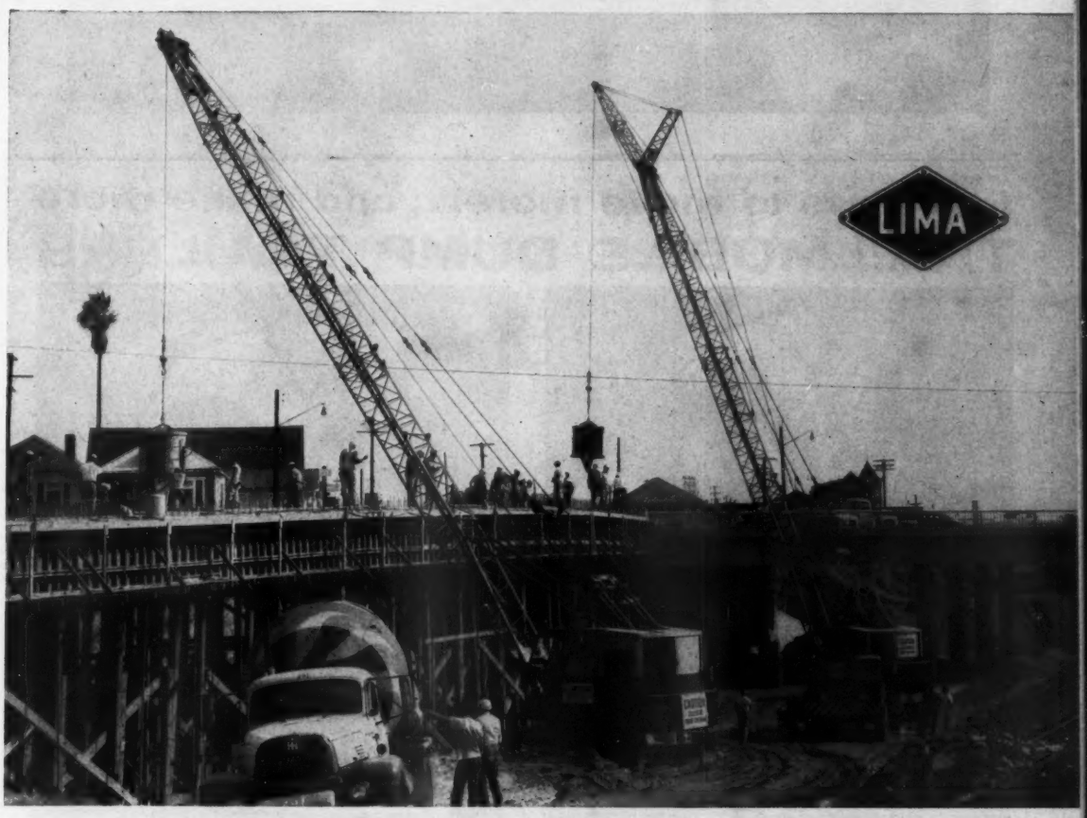
Universal Atlas names

■ Universal Atlas Cement, Division of United States Steel Corp., New York, N. Y., has named E. Bernard Meyer as assistant chief engineer. A 21-year veteran of the company, Meyer has been project development engineer since 1956.

September equipment show will be held by Koehring

■ The Koehring Co., Milwaukee, Wis., is planning a 4-day Construction Equipment Show in September at the company's proving grounds near Waukesha, Wis. All of the company's construction-equipment divisions, subsidiaries, and branches will exhibit. Equipment for a wide variety of construction activities will be displayed in two flights: one on September 19 and 20, and one on September 22 and 23.

Participating units include the Koehring Division, Milwaukee, Wis.; Buffalo-Springfield Co., Springfield, Ohio; Flaherty Mfg., Pocatello, Idaho; C. S. Johnson Co., Champaign, Ill.; Koehring-California Co., Stockton, Calif.; Koehring Export Division, Milwaukee; Koehring-Waterous Ltd., Brantford, Ont., Canada; Kwik-Mix Co. and KA-MO Tools, Port Washington, Wis.; and Parsons Co. and Shawnee Mfg., Newton, Iowa.



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For more facts, use Request Card at page 18 and circle No. 285

At Pacific Gas & Electric Co.'s new plant at The Geysers in northern California—the first plant in the Western Hemisphere to use steam produced by the earth—men cast concrete substructures for a dust separator at one of the steam wells. Dust blowing up with the steam is removed to prevent damage to the turbine.

Steam from the earth produces electric power

Contractors & Engineers staff article

Harnessing geothermal steam produced deep within the earth, Pacific Gas & Electric Co.'s new 12,500-kw electric power generating station at The Geysers in northern California becomes the first such plant in the Western Hemisphere. It is the first privately owned plant in the world to use geothermal steam for power production.

Within the past few years, natural steam sources have been harnessed for power production in Italy and New Zealand. Both of these developments are subsidized by the respective governments. At The Geysers, natural steam has run a small reciprocating steam engine driving a generator to produce power for the resort.

Although the first steam wells in the area were drilled in the early 1920's, it is only within the past five years that real progress has been made toward using this natural resource for power production.

Tourist attraction

Discovered in 1847 by William Bell Elliott while he was hunting grizzlies in the mountains between Cloverdale and Calistoga, Calif., "The Geysers" has long been a curiosity and a tourist attraction. Within a distance of about a quarter of a mile, Elliott found a number of boiling springs and fumaroles with steam issuing from vents in the ground. Actually, there are no geysers.

In 1863, Clark Foss opened a 26-mile stage route from Healdsburg to The Geysers, and since that time many visitors have viewed the strange display of nature. The narrow winding road leading over the mountains to the canyon of Big Sulphur Creek, where The Geysers is located, is probably just as crooked as the one Foss first traveled with his stagecoach.

Drill steam wells

In the early 1920's, steam wells were drilled in the area. Except for the small generator at the resort, no profitable use could be found for the steam. Subsequently, The Geyser Development Co. was formed and acquired a 5½-mile strip of land along the creek where the fumaroles are located. In 1955, the Magma Power Co. obtained a 99-year lease, and it and the Thermal Power Co. drilled the wells that will be used to generate power.

These wells are drilled by methods and techniques similar to those used for gas wells. The typical well starts with a 13-inch casing that steps

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Corrosion from soil, water, and steam is big problem in the design and construction of plant units

Steam wells have casings with valves that can be closed to stop the discharge. Orifices discharge the steam at about the rate the power plant will use it. They are left open since wells remain in better condition when they are in operation. Piers, foreground, will carry the steam line to the plant.

down as the hole deepens. Once the casing is well established in solid rock, a 12-inch open hole is carried on down. The producing wells range from 450 to 750 feet deep, but plans are under way to send down a test hole to a much greater depth.

The Thermal Power Co. has connected four of the best producing wells to a 20-inch pipeline that leads about a quarter of a mile to the location of the new PG&E power plant.

Research precedes construction

Before starting construction of the $2 million power plant, the power company's engineers and technicians conducted an extensive testing and research program on the steam. The wells were tested for temperature, pressure, and production. The steam was carefully analyzed for its physical and chemical properties. Soil and subsoil conditions were explored. These and many more studies confirmed the feasibility of building the plant.

The steam was found to contain some dust, which is being removed at the wells by a centrifugal-type dust separator. The steam also contains some noncondensable gases, such as carbon dioxide, methane, etc. Special provisions were designed to exhaust these gases from the condenser. The most serious problem, however, resulted from the very corrosive nature of the condensate.

Tests showed that ordinary steels and even some of the stainless-steel alloys suffered severely from corrosion when they came in contact with the condensate or the steam. Even the atmosphere in the plant area was corrosive. Because of this, many of the elements of the plant have been made of stainless steel, aluminum, cast iron, or other relatively corrosion-resistant materials.

Building the plant

The steep-walled canyon in which the plant had to be located provided little space for the structures. The grading subcontractor, Young & Engelke Co., Healdsburg, dozed out a small level site using Cat D8 and D7 dozers and compacted the fill areas with a D4 and a sheepsfoot roller. The general contractors, Christensen & Foster, Santa Rosa, put down the spread concrete footings using transit-mix concrete. The concrete was supplied from a small batch plant set up a short distance away by the Healdsburg Ready Mix Co.

(Continued on next page)

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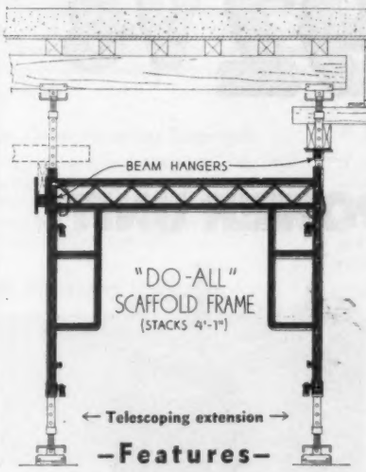

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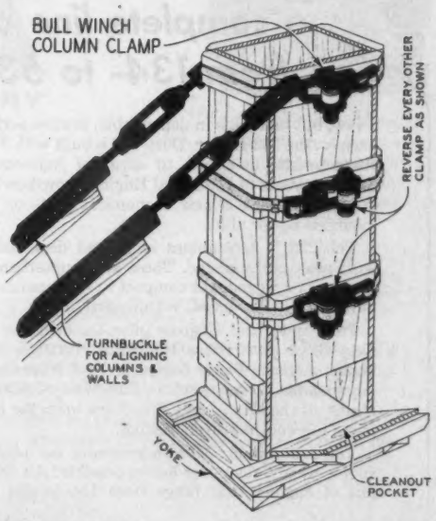

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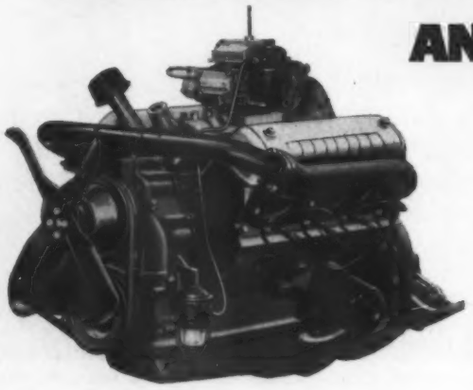
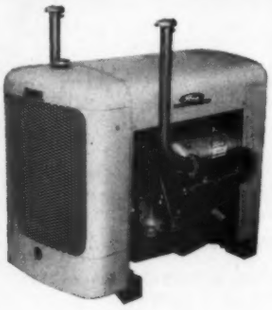
Two unusual features of the plant are: (1) the corrosion-resistant materials used because of the corrosive nature of the condensate; (2) the absence of boiler and fuel-handling facilities.

A Peterbilt truck delivers the exciter to the plant. An overhead crane picks up all heavy equipment delivered by truck and brings it to crews that handle assembly inside the plant.

Technicians check the steam pressure and discharge from one of the wells. PG&E spent several years running extensive tests on the capacity and characteristics of the steam wells before starting construction.

Announcing the rugged FORD 292 V-8 INDUSTRIAL ENGINE AND POWER UNIT!





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→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

For more facts, use Request Card at page 18 and circle No. 288

(Continued from preceding page)

The steel superstructure of the powerhouse building was fabricated and erected by Herrick Iron Works, Hayward, which used a Lorain motor crane to set the steel. The exterior of the building is sided with Alcoa Alumalure ribbed stucco-embossed siding.

The cooling tower, one of the major components of the plant, was furnished and erected by the Fluor Corp., Los Angeles. The tower is a redwood frame structure with redwood louvers and a plastic "fill" of egg-crate design. The tower was built with stainless-steel nails, and all other hardware is of either stainless steel or aluminum. The big 4-blade adjustable-pitch fans at the top of the cooling tower are also of stainless steel.

Piping and electrical conduit are either of aluminum or stainless steel. Some large cast-iron valves are used, but the smaller working parts are of stainless steel.

Since even concrete is not resistant to the corrosive effects of the steam and condensate, all exposed concrete surfaces have been coated with Tarset, a corrosion-resisting coating made by Pittsburgh Chemical Co.

Rebuild old generator

An old generator in the PG&E system was adapted for use in the plant and installed by the General Electric Co. Turbine blades, as well as many other parts exposed to the steam, were changed to stainless steel.

The electrical and mechanical features of the plant were installed by Wismer & Becker, contracting engineering firm of Sacramento. One of the unusual factors of this installation is the aluminum 60-kv switch structure. If the plant operates as expected, additional units may be added —provided sufficient steam is developed.

The Geysers Power Plant was designed by the PG&E engineering department and has been built under the supervision of the company's general construction department, which was represented at the site by C. O. "Chuck" Erwin and Stan Bates. Erwin handled the electrical and mechanical features, while Bates looked

ALPHA

BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

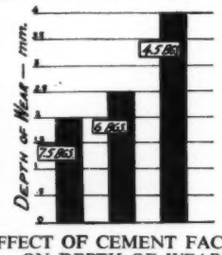
news and notes from the field

7 Factors Affecting Life of Concrete Floors

Long-wearing concrete floors are easy to build if a few practical steps are observed in designing, placing and curing them. Naturally, the most important part of the floor is its wearing surface. The hardness or "wearability" of the surface is of special importance for such jobs as industrial floors, warehouses, loading platforms, etc.

Through years of on-the-job study and extensive research work, Alpha has found that the following 7 factors must be considered if floors are expected to endure heavy wear. *Please note that these factors are not short cuts and also you can't omit the importance of quality materials, good supervision and good workmanship.*

1. The Cement Factor



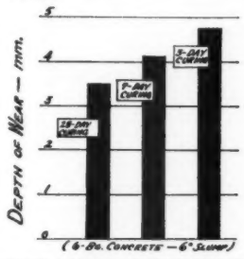
EFFECT OF CEMENT FACTOR ON DEPTH OF WEAR
(2″ slump and 28-day curing)

A 7.5-bag mix will wear 20% better than a 6-bag mix and 100% better than a 4.5-bag mix at the same slump and with the same 28 days moist curing.

2. Slump of Concrete

By *reducing* the slump from 6″ to 2″, the wearability of floors made of 4.5-bag concrete will be increased by 15%.

3. Length of Moist Curing Time



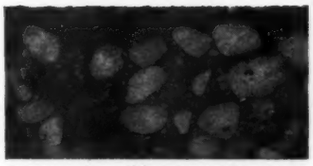
EFFECT OF MOIST CURING TIME ON DEPTH OF WEAR
(6-bag concrete, 6″ slump)

The higher the slump the more the concrete is affected by improper curing. The chart above shows how moist curing improves the wearability of 6″ slump concrete.

4. Compressive Strength

For all practical purposes, the wearability of concrete is directly proportional to its strength. Example: 6000 psi concrete wears over four times better than 1800 psi concrete.

5. Finishing Concrete



Overtroweling will cause the finest particles and water to rise to the top, thus resulting in a low strength surface skin.

The importance of troweling at the right time can be seen in the fact that the surface skin of 0″ to 4″ slump concrete can show the *same* amount of wear. Water and fines brought to the surface through careless troweling of lower slump concrete reduces the surface strength until it is no better than higher (up to 4″) slump concrete. The surface hardness of 4″ slump concrete is 100% better than 10″ slump concrete.

6. The Type of Cement

In cases where concrete is subjected to wear at an early age, provision must be made for high-early concrete strength. This can be done by using hi-early cement or a higher cement factor where Type I cement is used. Such conditions vary too much for specific recommendations here, but Alpha's field engineers are always available to users of Alpha products to assist in determining the proper construction method for special conditions.

7. Drying After Curing

If concrete is permitted to dry *after proper curing*, its surface skin strength is almost doubled. It is advisable, therefore, to allow at least one day of drying after moist curing before the floor is subjected to heavy wear.

Good sound aggregates are important, but it is the mortar binding the aggregates together that determines, for the most part, the wearability of the floor. There is no short cut to quality concrete and as has been proved time and again, the right way is the most economical in the long run.

Note: *All data on this page are approximate and intended for general guidance and not specific rules in concrete floor design and construction.*

Reprints of the helpful information presented on this page are available on request.

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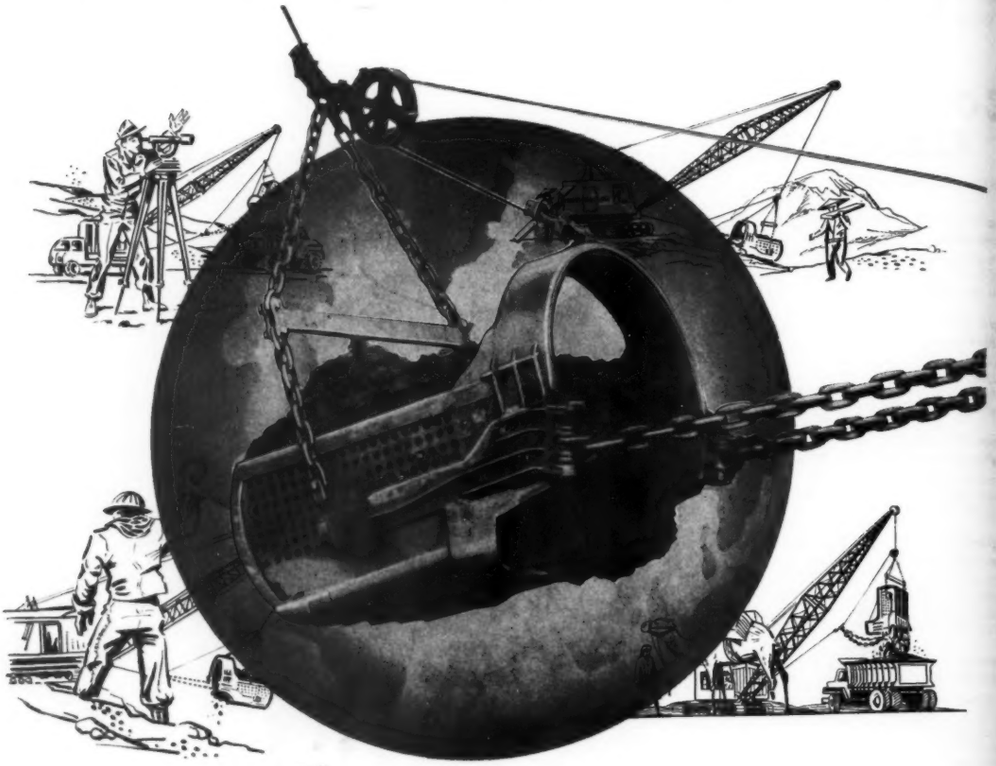

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after the structural and civil engineering details. On-the-job supervision for Thermal Power Co. was handled by engineer William M. Middleton.

Reade Wise was superintendent for Christensen & Foster; Hugh Martin supervised operations for Wismer & Becker; John Leithold was erection superintendent for General Electric; and George Davis supervised erection of the cooling tower for Fluor Corp.

THE END

Convention Calendar

August 14–19 National Shade Tree Conference

Meeting, Statler Hotel, Boston, Mass. NSTC, Sec.-Treas., L. C. Chadwick, 1827 Neil Ave., Columbus, Ohio.

September 5–17 International Society of Photogrammetry

Congress, London, England. C. E. Palmer, American Society of Photogrammetry, 1515 Massachusetts Ave. N.W., Washington 5, D. C.

September 6–8 New York State County Highway Superintendents Association

Summer meeting, Concord Hotel, Kiamesha Lake, N. Y. Harry R. Mason, 1420 Western Ave., Albany, N. Y.

September 11–16 Management Development Conferences

Conferences, California Institute of Technology, Pasadena, Calif. Management Development Center, California Institute of Technology, Pasadena, Calif.

September 12–23 Fundamental Principles of Nondestructive Testing

Summer Conference Course, Ohio State University, Columbus, Ohio. Dr. Robert C. McMaster, Dept. of Welding Engineering, Ohio State University, 190 W. 19th Ave., Columbus 10, Ohio.

September 15–16 Engineering Management Conference

Joint meeting of ASME and AIEE, Hotel Morrison, Chicago, Ill. A. B. Conlin, Jr., American Society of Mechanical Engineers, 29 W. 39th St., New York 18.

September 19–21 County Division of the American Road Builders' Association

Eighth Annual National Highway Conference, Atlanta Biltmore Hotel, Atlanta, Ga. Ben F. Ostergren. County Division, ARBA, World Center Building, Washington 6, D. C.

September 26–29 American Welding Society

Fall meeting, Penn-Sheraton Hotel, Pittsburgh, Pa. F. J. Mooney, AWS, 33 W. 39th St., New York 18, N. Y.

September 27–30 Prestressed Concrete Institute

Sixth Annual Convention, Statler Hilton Hotel, New York, N. Y. Norman L. Scott, Exec. Sec., 205 W. Wacker Drive, Chicago 6, Ill.

October 3–5 National Association of Corrosion Engineers

Short course, San Francisco, cosponsored by NACE and University of California. Dr. I. Cornet, University of California, Engineering and Sciences Extension, 2451 Bancroft Way, Berkeley 4, Calif.

October 3–5 National Association of Corrosion Engineers

Short course, University of Oklahoma, Norman, Okla., cosponsored by NACE and University of Oklahoma. T. J. Hull, NACE, 1061 M & M Bldg., Houston 2, Texas.

October 4–6 Producers Council, Inc.

Meeting, Drake Hotel, Chicago, Ill. Keith R. Beleh, 2029 K St. N.W., Washington 6, D. C.

October 4–7 Ohio Short Course on Roadside Development

Nineteenth annual course, Neil House, State Office Building, and Ohio Union, Ohio State University, Columbus, Ohio. Wilbur Garmhausen, Ohio Department of Highways, 450 E. Town St., Columbus 15, Ohio.

October 6–7 Western Region of the National Association of Corrosion Engineers

Conference, Sheraton-Palace Hotel, San Francisco, Calif. T. J. Hull, NACE, 1061 M & M Bldg., Houston 2, Texas.

October 6–8 Southeast Region of the National Association of Corrosion Engineers

Conference, Dinkler-Plaza Hotel, Atlanta, Ga. T. J. Hull, NACE, 1061 M & M Bldg., Houston 2, Texas.

October 10–14 American Society of Civil Engineers

Annual meeting, Hotel Statler, Boston, Mass. W. H. Wisely, ASCE, 33 W. 39th St., New York 18, N. Y.

October 11–14 Northeast Region of the National Association of Corrosion Engineers

Conference, Prichard Hotel, Huntington, W. Va. T. J. Hull, NACE, 1061 M & M Bldg., Houston 2, Texas.

October 17–21 National Safety Council

48th annual National Safety Congress, Conrad Hilton and other hotels, Chicago, Ill. R. L. Forney, NSC, 425 N. Michigan Ave., Chicago 11, Ill.

October 19–20 North Central Region of the National Association of Corrosion Engineers

Conference, Pfister Hotel, Milwaukee, Wis. T. J. Hull, 1061 M & M Bldg., Houston 2. Texas.

October 25–27 South Central Region of the National Association of Corrosion Engineers

Conference, Mayo Hotel, Tulsa, Okla. T. J. Hull, 1061 M & M Bldg., Houston 2, Texas.

October 31–November 2 American Concrete Institute

Semiannual regional meeting, Pioneer Hotel, Tucson, Ariz. William Maples, ACI, P.O. Box 4754, Redford Station, Detroit 19, Mich.

Executives reassigned by Allison Division

■ The Allison Division of General Motors, Indianapolis, Ind., has consolidated its bearings department into its transmissions operations. Several executive changes have resulted.

The former manager of the Bearings Department, Edgar G. Davis, has become manufacturing manager of transmissions operations. Hugh C. Kirtland, previously chief engineer, transmissions applications, has been made manager of quality control. The former manager of quality control, Paul J. Lindley, has been appointed manager of reliability. William J. Purchas, Jr., has been named chief engineer of applications.

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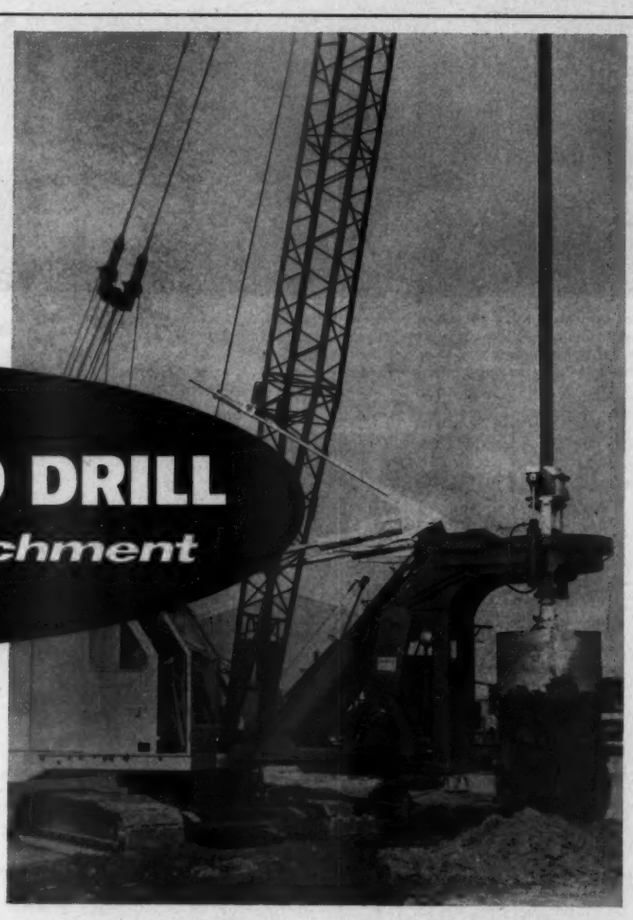
crane attachment



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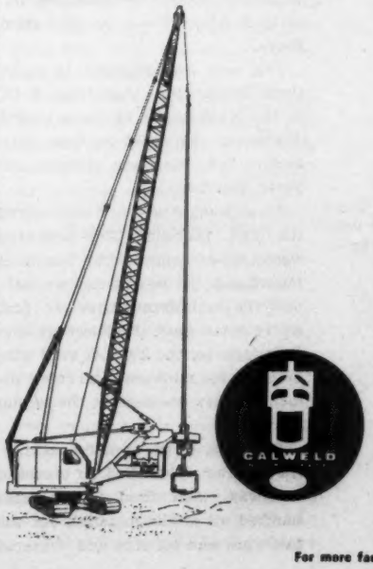

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All models contain their own power units, and operate independently of the crane power to dig holes from 12″ to 120″ in diameter. Hydraulic controls are mounted in the crane cab for easy, one-man operation. The average crane man can operate a Calweld without previous training or experience.

Hydraulic drill positioner and boom stop combination also provide for slant hole drilling to a 1 to 3 batter with positive accuracy. Hydraulically-operated kelly drive yoke acts as kelly crowd and adds to the crane's capacity for pulling casings.

Telescoping and triplescoping kelly bar permit drilling to 150′ deep without extra drill stems. Drill buckets and attachments of various types are available for fast drilling under any conditions.

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The second 350-foot arch rib of the Trans-Canada highway bridge over Capilano Canyon at North Vancouver, B. C., is being formed while crews build forms for the columns and deck over the first arch. The arch falsework, of glue-laminated timber, is supported on four steel towers and the abutments. A cableway with fixed towers handles all materials for falsework, forming, and concrete work.

The job starts with trusses being positioned by the cableway to support the formwork for an arch rib. Here, it handles the midstream-span truss. Because of the unpredictable nature of the river, four supports were required in the stream bed.

Workmen form the soffit for the first arch. The 3×6 joists are laid across the trusses to support the plywood sheets. Joists extend to both sides of the arch ribs to provide walkways for the crews working on the project.

At Capilano Canyon Bridge, the...

Arch falsework

Building an arch bridge across an unpredictable stream, which changes from a gentle trickle to a raging torrent in a matter of hours, imposed two major restrictions on the contractor for a Trans-Canada Highway project. First, the arch falsework could have no more than four piers in the river and had to be able to withstand flood conditions. Second, all materials had to be handled from above.

This was the situation faced by Perini Pacific, Ltd., Vancouver, B. C., in the construction of the beautiful double-rib reinforced-concrete arch bridge over Capilano Canyon in North Vancouver.

An unusual falsework design solved the first problem. Glue-laminated wood trusses, supported on four steel towers and the two abutments, carried the arch form. After the first arch rib was cast, the falsework and soffit form for the 350-foot arch were lowered onto mine cars and rolled intact to a new position for the second rib.

In answer to the second challenge, the contractor installed an overhead cableway, with fixed towers, that handled all of the materials for the falsework and forming and delivered the concrete to the forms in 3-yard buckets.

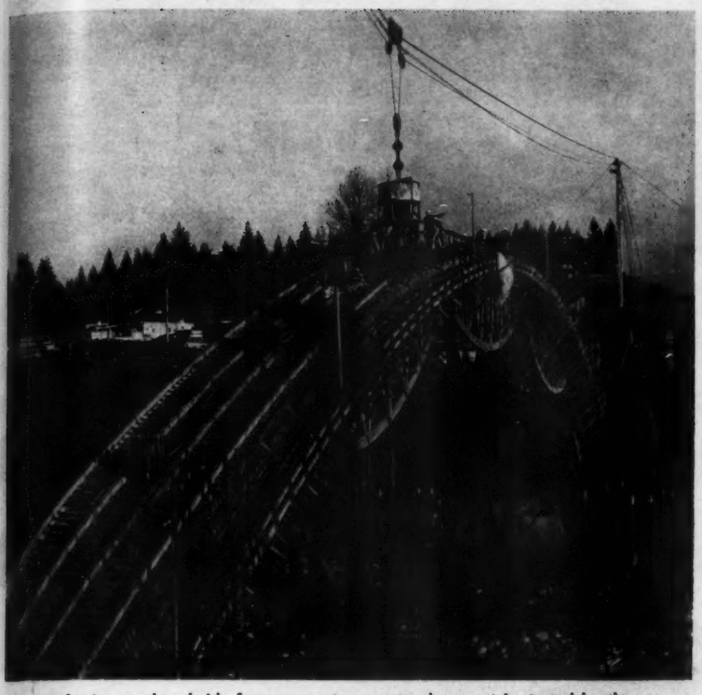
After one arch was finished, and the falsework for the deck erected, the cableway was relocated over the second arch.

The Capilano Canyon Bridge was built under a $540,000 contract with the British Columbia Department of Highways. The bridge is a segment of the Trans-Canada Highway, in which the Dominion and the provincial government share the cost. Consultant engineer for the structure was Choukalos, Woodburn, Hooley & McKenzie, Ltd., Vancouver.

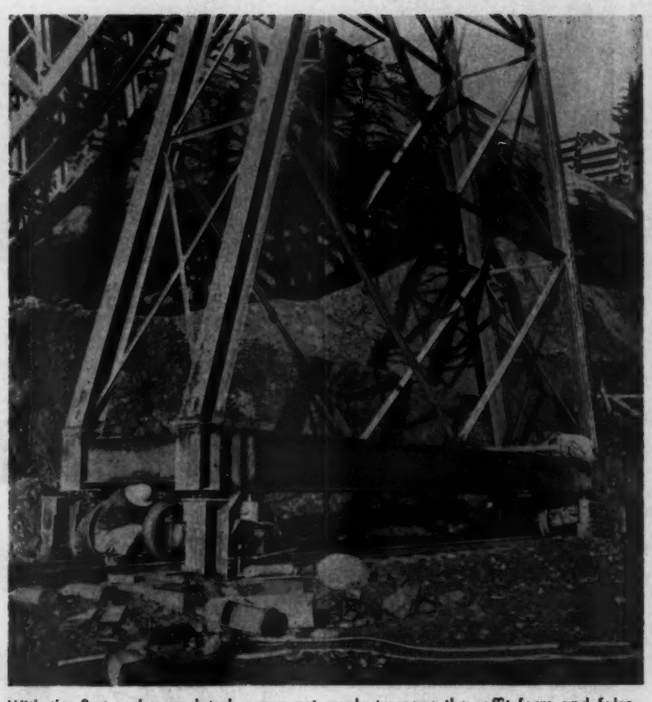
Hollow arch ribs

Each of the two arch ribs has a span of 350 feet and a rise of 57 feet from the abutment to the center. The center is about 80 feet above the stream bed. The ribs have a constant width of 12 feet, with the depth varying from 89 inches at the abutments to 57 inches at the center.

The sides of the arches are indented to give the cross section the shape of an extremely fat I. Two octagonal or round voids in the section eliminate much of the dead weight and give it the appearance of a box-girder section. Near the abut-



After reinforcing steel and side forms are set, concrete placement is started by the cableway with a 3-yard bucket. Placement of 600 cubic yards of concrete in this first arch was handled in 34 hours. Plenty of vibration was needed to work the concrete down around the heavy reinforcing. Concrete was delivered to the cableway by transit mixers.



With the first arch completed, crews get ready to move the soffit form and falsework system into location for the second arch. Grout pads under the stub legs of the steel towers were first chipped away; then the stub legs were dismantled with the tower supported on jacks. This tower is lowered onto mine cars on rails for the move to the new position some 35 feet away.

moves on rails

Contractors & Engineers staff article

ments, the voids are formed with wood forms that cannot be recovered. In the area of the crown of the arch, the voids are formed with round Sonovoid forms.

Reinforced-concrete columns rise from the arch ribs to support the waffle-type concrete deck. The arch ribs are spaced 34.75 feet center to center. The deck has a 54-foot roadway with 6-foot sidewalks on both sides.

Prestressed-concrete girders carry the approach spans, which have 50 and 80-foot spans.

Steel towers carry falsework

While the concrete abutments for the bridge were being excavated, formed, and cast, the contractor placed the concrete footings in the river bed for the four steel towers that supported the arch falsework. This was done at a time when the water flow was low so that transit mixers and other equipment could work in the stream bed.

The four towers were fabricated by A.I.M. Steel, Ltd., New Westminster, B. C., to fit the unusual job conditions. Two of the towers were 73 feet high and the other two 54 feet high. They were 35 feet long at the base, tapering to 8 feet at the top, and had a width of 6 feet. Four 12-inch 53-pound H-pile sections formed the legs, which were on a heavy I-beam frame at the bottom and were braced with a system of angle braces.

Stub H-pile legs between the footings and the I-beam base frame were demountable to permit lowering and moving of the towers. These stub legs rested on removable shims and a 5-inch-thick grout pad on top of the concrete footings.

These stable, well founded towers were designed to resist wind loads and the effects of floodwaters without the necessity for any type of guying or other external bracing.

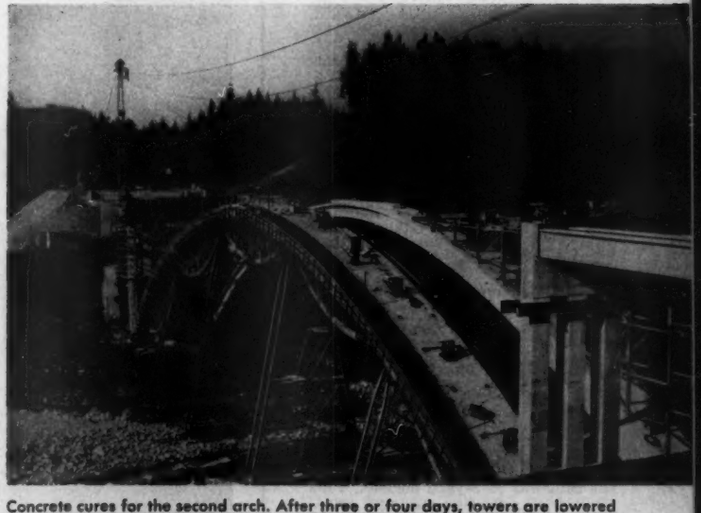
Wood trusses support forms

Spanning the 70-foot intervals between the towers were timber trusses of glue-laminated construction. Three of these trusses were set side by side at 4-foot centers to support the arch-rib forms in each span.

The top chords of these trusses were shaped to the exact contour of the underside of the arch while lower chords were bowstring-shaped. The top chord consisted of twelve 2 × 8 laminations; the lower chord had

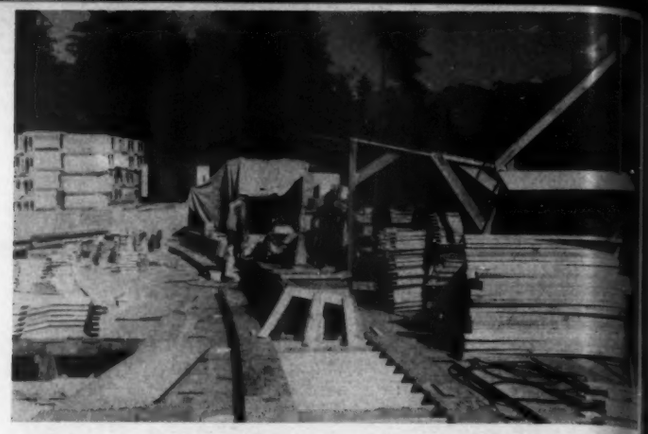
(Continued on next page)

The falsework clears the first completed arch as it is moved into position for the second.



Concrete cures for the second arch. After three or four days, towers are lowered to relieve shrinkage stresses and to apply some of the dead load to the arch. At right, prestressed girders are being set for the approach spans.

A Bucyrus-Erie crane and a Link-Belt handle a prestressed girder being set for the east approach span, which carries the Trans-Canada Highway over the Capilano Canyon road.



Forms for the arch ribs are fabricated in a yard near the west abutment. In the foreground, workmen have laid out the shape of the arch and are building the side forms for it. Completed sections are stockpiled, background, for quick assembly.

(*Continued from preceding page*)

eleven. Timber posts and X-bracing completed the trusses. The 15 timber trusses were supplied by American Fabricators, Ltd., New Westminster. They weighed about 3 tons each and were placed by the cableway.

The 8.5-ton cableway, which handled all of the falsework, form materials, reinforcing steel, concrete, and other materials for the bridge was supplied by the Dominion Bridge Co., Vancouver. It spanned 675 feet across the canyon. The cableway had a 3-drum hoist and a main line of 1⅞ inches. On the east side, the tower was located 25 feet behind the end abutment; on the west side, it was on the center pier from the approach span. Because of this, the west approach could not be completed until the cableway was taken down.

Forms prefabricated

With the falsework bents and trusses in place, the workmen built up the soffit form with 3 × 6 timber joists laid across the three trusses and covered with full sheets of ¾-inch plywood. Some of the joists were extended out to each side of the arch form to provide walkways along both sides for the workmen.

The tapering, indented side forms were all prefabricated in a form yard while the abutments and the arch falsework were being built. The core forms for the voids in the arch rib were also prefabricated in this yard.

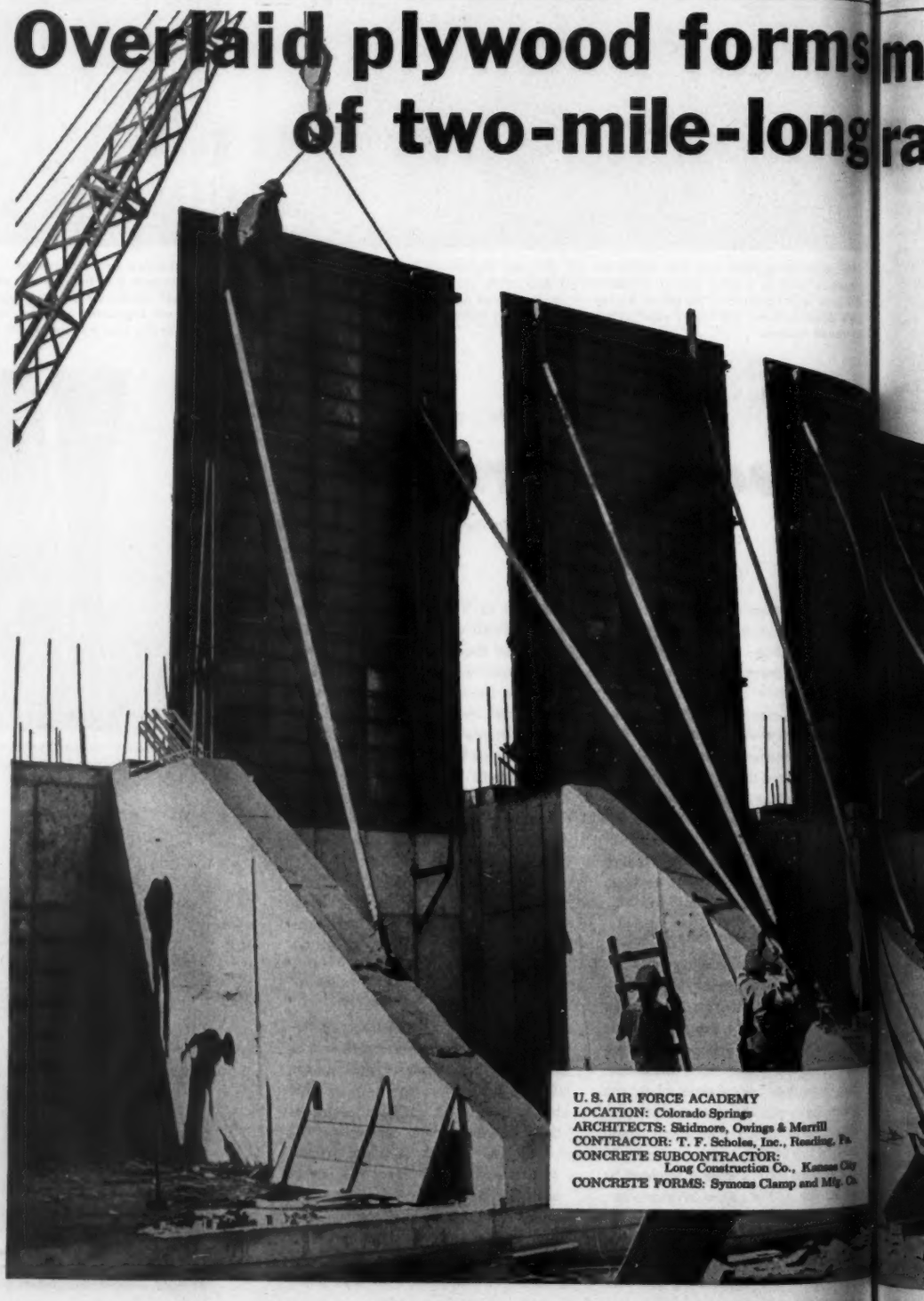
When the soffit form was ready, the cableway delivered the side forms and void forms, which were quickly fitted into place. The forms were tied through with high-tensile rods and Williams form clamps. A cover form was required on the steeply sloping portions of the arch, and this was also tied down with Williams rods and clamps.

Continuous placement

Each of the arch ribs contains about 600 cubic yards of concrete, which had to be placed continuously, since construction joints were not permitted.

The concrete was delivered in transit mixers and carried to the forms by the cableway in 3-yard buckets. Very careful placement and lots of vibration worked the concrete down into

Overlaid plywood forms of two-mile-long



U. S. AIR FORCE ACADEMY
LOCATION: Colorado Springs
ARCHITECTS: Skidmore, Owings & Merrill
CONTRACTOR: T. F. Scholes, Inc., Reading, Pa.
CONCRETE SUBCONTRACTOR: Long Construction Co., Kansas City
CONCRETE FORMS: Symons Clamp and Mfg. Co.

the intricate and heavily reinforced form to produce sound concrete with a minimum of surface blemishes.

The north or upstream arch was placed first. It required 34 hours of continuous placement. Concrete for the second arch was placed in three days, and was completed in just 26 hours.

A Plastiment retarding agent was incorporated in the mix to retard the set long enough for the full dead load to be applied to each truss. This eliminated the possibility of movement and cracks in the arch due to the deflection of the trusses.

Three or four days after the concrete was placed, the shims were removed from under the legs of the falsework towers, lowering the centering slightly. This relieved the shrinkage stresses in the concrete and transferred a portion of the dead load from the form to the arch concrete.

Move falsework intact

While the concrete in the first arch was curing, the crews laid rails under the tower piers extending from the position of the first arch to the location of the second, some 35 feet downstream. The top and side forms were stripped from the first arch, and the complete centering system, including the soffit form, was then moved to the new position.

Jacks were installed under the tower bases, and the 5 inches of grout was chipped away from under each of the stub legs of the towers. These legs were then removed, and the towers were lowered onto mine cars on the rails. Rollers were installed under the ends of the falsework trusses on the abutments.

With come-alongs on the ends, and car movers on the mine cars, the workmen rolled the complete system to its new position. The job of lowering the towers onto the mine cars required about two days, but the actual move was completed in half a day.

The towers were jacked back up to grade in the new location, the stub legs were bolted back on, and new grout pads were placed under the legs. The plywood surface was in perfect condition, but because of the move the soffit form was out of line, and it had to be stripped and re-ligned.

Forming for the columns and erection of deck falsework was started from the first arch while the second was being placed. During this same period, the prestressed-concrete girders for the east approach spans were placed, and the deck slab was poured.

Personnel

The project was supervised for Perini Pacific, Ltd., by superintendent J. Eddleston, engineer Curt Mellquist, and office manager W. Magel. Alex Jack served as resident engineer for the consulting engineering firm. E. C. Webster is director of construction, and F. T. Brown is chief engineer of the provincial highway department.

THE END

make fast work rampart at Air Academy

OVERLAID PLYWOOD CONCRETE FORMS did a big job in a hurry at the Air Force Academy in Colorado Springs. The 10,000 ft. retaining wall that bounds two sides of the raised campus was formed at the rate of 70 lin. ft. daily. Large plywood panel assemblies cut time and cost because of their high rate of re-use. And the overlaid plywood made a flawlessly smooth concrete wall to set the imposing buildings on a fitting pedestal.

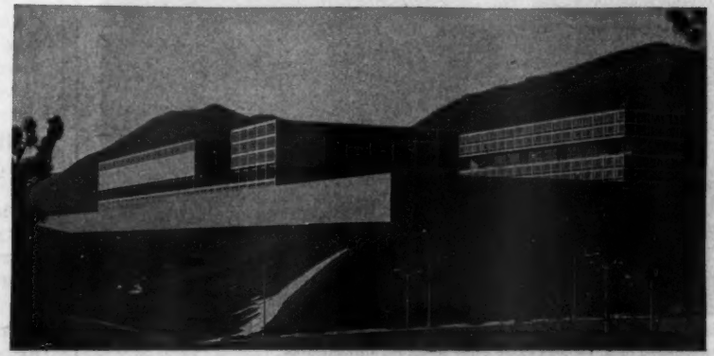
Wall height varies from 15½ to 33 ft. Along most of its length, counterforts on 14-ft. centers connect it with an anchor wall 18 ft. to the rear. Each 70-ft.-long section was concreted in three pours: first, footings; second, anchor wall and the lower 13 ft. of both counterforts and main wall; third, upper portions.

Form components were Symons Steel-Ply forms—2x8-ft. panels of high density overlaid fir plywood, encased in steel frames 2½ in. thick. They were pre-assembled into large units, two panels high and six wide, and placed by crane or from traveling scaffolds. Overlaid plywood was specified to produce ultra-smooth concrete and for its high re-usability. The contractor formed 600,000 sq. ft. of wall with 37,000 sq. ft. of plywood and has used the same forms many times since.

ALWAYS SPECIFY DFPA-QUALITY TRADEMARKED PLYWOOD. Concrete form grades include: INTERIOR PLYFORM®—standard concrete form grade, made with moisture-resistant glue, gives multiple (up to 12) re-uses; EXTERIOR PLYFORM®—standard concrete form grade, made with waterproof glue, gives up to 25 or more re-uses; OVERLAID EXTERIOR PLYWOOD—special panel with hard, glossy resin-fiber surfaces—forms smoothest concrete, gives up to 200 re-uses.

DOUGLAS FIR PLYWOOD ASSOCIATION
TACOMA 2, WASHINGTON
—a non-profit industry organization devoted to research, promotion and quality control

DFPA TESTED QUALITY



In design and material, the wall is architecturally harmonious with the raised geometric campus it encompasses. Overlaid plywood forms insured ultra-smooth concrete, and cut labor time because of rapid re-use.

For more facts, use Request Card at page 18 and circle No. 293

AASHO Road Test extended to November

■ The test traffic phase of the Road Test at Ottawa, Ill., has been extended to November 30, in order to meet the original goal of the project, which is sponsored by the American Association of State Highway Officials and administered by the Highway Research Board. The project called for approximately 1 million applications of specific axle loads, during a 2-year period, on each of the many pavement test sections.

The test vehicle fleet has accumulated about 11 million miles and about 700,000 axle-load applications. Data analysis and special studies will be carried on during next winter and summer, so that all reports will be ready by September 30, 1961.

McGraw produces film on plant construction

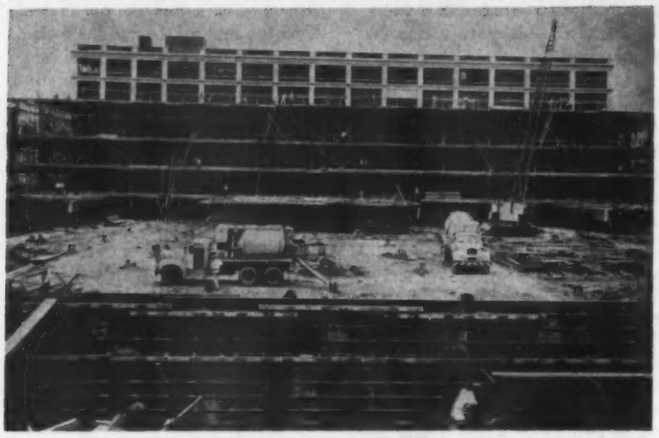
■ "The Master Builders," a new film on the construction of a large industrial plant, is available to engineering groups from the producer, F. H. McGraw & Co., New York, N. Y.

The 16-mm sound and color film, in production for more than two years, covers the construction of an aluminum-producing plant in Ohio and a chemical refinery plant in Louisiana, from the time ground was broken, through earthmoving, site stabilization, steel erection, and completion of the facilities. The film may be obtained on loan for a small handling and insurance charge by writing the New York City office of the McGraw company at 51 E. 42nd St.

Three reassigned by Atlas Copco

■ Three men have been moved up to new executive posts by Atlas Copco, New York, N. Y., manufacturer of air compressors and pneumatic equipment. Martin James has been made sales manager of Atlas Copco Pacific's mining and construction divisions and will work out of San Carlos, Calif. His former post as rock-drill sales manager for Atlas Copco Eastern, in Paramus, N. J., is being filled by Dan J. Goodwin.

Until now, Goodwin has been northeast district manager for Atlas Copco Eastern. This post is assumed by Michael W. Bremner, formerly in the Niagara Falls region.



After each 53-foot, 4-story section of this warehouse in Pittsburgh is completed, the concrete forms and steel shoring are slid over to form the next section.

Concrete warehouse built with sliding forms

■ A contractor in Pittsburgh is building a warehouse, not from the ground up but from side to side. Dick Corp., constructing the 4-story building for Kaufman's Department Store, starts at one end and places concrete for the full width of the second, third, and fourth floors and the roof. The job is done in 53-foot sections.

The result is a sheared-off 4-story section of the building. The contractor then slides over the concrete forms and the steel shoring on which they rest to construct the next 53-foot section. The shoring is slid in sections one bay wide (20 feet) × 53 feet. The drophead formwork panels are hinged so that they can be lowered to pass obstructions during the sliding operation.

The building will be 287 × 272 feet, and the concrete is up to 8½ inches thick. The ceiling heights are: roof, 15 feet 8 inches; fourth floor, 11 feet 8 inches; third floor, 11 feet 9 inches; and second floor, 10 feet 11 inches.

The forms and the concrete are supported by Trouble Saver sectional steel shoring, supplied by The Patent Scaffolding Co., Inc., Long Island City, N. Y. Some 2,179 frames are being used, plus the necessary tee-heads and U-heads used atop the frame legs to receive joists. At the bottom of each frame leg are adjustable screw legs to provide accurate and quick adjustment to proper height. The engineering department of Patent Scaffolding and the contractor worked closely together on the design of the formwork.

So durable it outlives the project . . .

Galvanized Beth-Cu-Loy Drainage Pipe

For over 50 years thousands of corrugated metal pipe installations have been studied. These studies show clearly that drainage structures made of galvanized corrugated Beth-Cu-Loy steel sheets are as durable as you could want. That's one reason why you can figure that Beth-Cu-Loy pipe will probably outlive the original drainage need.

A Beth-Cu-Loy drainage structure gets its durability from two sources. First, the strong copper-bearing steel sheet itself; second, the tightly-adherent corrosion-resisting zinc coating (2 oz per sq ft by triple spot test). These two ingredients combine to give you a pipe that is strong, long-lasting, light in weight, flexible.

And flexibility is important, too. It is the flexibility of a Beth-Cu-Loy pipe that transfers some of the imposed load to the surrounding material. Many states actually specify the use of corrugated steel pipe under fills of less than 2 ft or more than 15 ft. The product lends itself to the pipe-arch design where low headroom is a factor.

A Beth-Cu-Loy pipe is easy to handle and install; requires a minimum of engineering. Field joints can be made in minutes without delays for setting or curing. The Beth-Cu-Loy sheets conform in all respects to the specs of the AASHO. Ask your fabricator for full details about drainage structures made from corrugated galvanized Beth-Cu-Loy.

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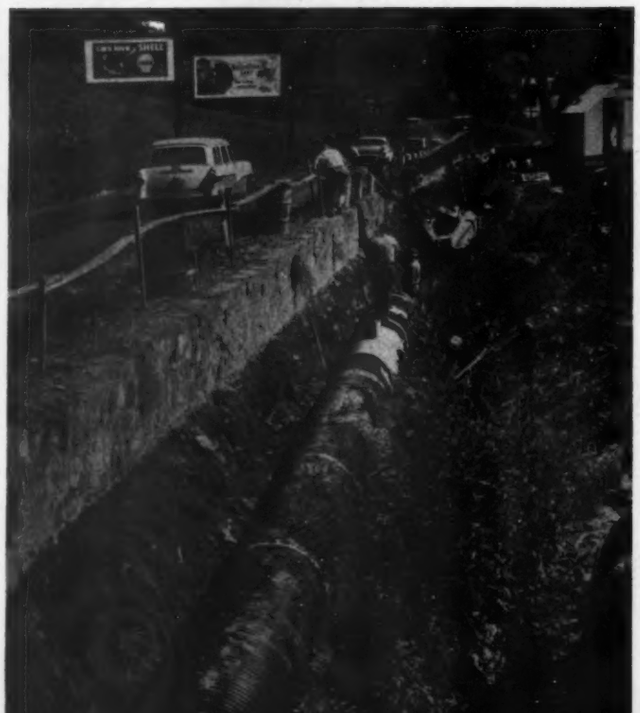


Tar-enameled Beth-Cu-Loy corrugated steel pipe being installed as storm sewer along eastern Pennsylvania road. The pipe should easily outlast this drainage need.

for strength
. . . economy
. . . versatility

BETHLEHEM STEEL

BETHLEHEM STEEL

For more facts, use Request Card at page 15 and circle No. 294

ARBA 1960 directory lists highway personnel

■ The 1960 edition of the American Road Builders' Association directory, "Highway Officials and Engineers," is now available. It lists more than 2,900 names, titles, and addresses of administrative engineers and officials in the 50 state highway departments, the District of Columbia, and Puerto Rico. Also listed are administrative personnel of the Bureau of Public Roads, toll-road authorities, and ARBA.

At $1 a copy, the pocket-size directory may be obtained from ARBA, World Center Building, Washington 6, D. C.

Lufkin Rule appoints

■ J. H. Walsh has been appointed eastern division sales manager by The Lufkin Rule Co., Saginaw, Mich. Formerly the company's merchandise manager, he succeeds Gordon R. Carpenter. He will operate from the Greater New York area, supervising the activities of salesmen in the Middle Atlantic states, Washington, D. C., and New England.

Carpenter will devote all of his time to management of the Middletown, N. Y., manufacturing division and office.

Relton acquires control of wire-tie firm

■ The Relton Corp., Pasadena, Calif., has purchased a controlling interest in The Working Corp., Northridge, Calif., licensee, from Loren F. Working, Jr., inventor of the Quick-Tie, a device for the automatic tying of concrete reinforcing rods. The Working Corp. will continue to make and sell the wire-tying device.

Relton, formerly Termite Drills, Inc., is the manufacturer of Concrete-Termite rotary masonry drills, used to drill holes in concrete.

Avoid legal pitfalls

Concrete users presumed to know of dangers

THE PROBLEM: *Under ordinary circumstances, is a supplier of ready-mix contract-bound to inform his customer of its caustic chemical properties?*

THE ANSWER: No. (Katz v. Arundel-Brooks Concrete Corp., 151 Atl. 2d 731, decided by the Maryland Court of Appeals.)

In this case a home owner ordered a quantity of ready-mix for a cellar floor. Kneeling in it without protective covering, he sustained burns and sued the supplier for damages. If, as decided by the court, a supplier of ready-mix to a casual user is not bound to warn against its caustic property, it must follow, for stronger reason, that a supplier of ordinary ready-mix to contractors and others accustomed to its use has a right to assume that the latter and their employees are aware of the need for caution in its use.

The court reasoned: There was no claim that the concrete was defective or that it was unsafe for use in the customary manner. The plaintiff got what he ordered—concrete mixed according to specifications. The case was governed by the rule of law that the supplier of any product is merely bound to make it reasonably safe for its intended use with ordinary care. A duty to warn of inherent dangers arises only where there is a reasonable probability that injury will occur unless warning is given. In most of the cases in which liability has been adjudged, there was a serious defect in the commodity supplied, or the commodity was so new that its dangerous properties could not reasonably be known or ascertained by the user.

Concrete has been in common use in every kind of construction for at least fifty years. It is perfectly safe to use, if normal precautions are taken against prolonged application to sensitive portions of the skin. The caustic properties of lime have been known for centuries. In considering the extent of the duty to warn, it is to be noted that ready-mix concrete is customarily sold to builders who are thoroughly familiar with its properties, not to a casual user without prior experience. Thus, warnings in most cases would be useless. It would be as unreasonable to require every supplier of concrete to warn of its caustic properties, as to require an electric company to warn of the danger of touching uninsulated wires. The danger is at least in the realm of common knowledge, which the supplier may properly take for granted.

Ambiguous bidding terms

THE PROBLEM: *A Minnesota city, in the market for 8,000 tons of burned lime for its water department, advertised for bids. The bidding form and specifications were ambiguous because the contract called for delivery F.O.B. but did not show where delivery was to be made. Was a taxpayer entitled to enjoin an award of the contract?*

THE ANSWER: Yes. (Gale v. City of St. Paul, 96 N.W. 2d 377, decided by the Minnesota Supreme Court.)

The court declared: Competitive bidding requirements prohibit a material change in a bid after the bids are open. The fundamental purpose of competitive bidding is to deprive contract-making officials of any discretion in areas which are susceptible to such abuses as fraud, favoritism, improvidence, and extravagance, and any competitive bidding procedure which defeats this fundamental purpose invalidates the contract even though no actual fraud is present.

Where the city quotation form requested competitive bids and instructed bidders to quote the lowest net price F.O.B. point of delivery, but by subsequent directions an ambiguity was created as to what constituted point of delivery, the existence of uncertainty was such as to allow discretion on the part of contract-making officials or to afford opportunity for abuse, and competitive bidding was rendered invalid even in the absence of any wrongdoing.

Roofer responsible for fire damage

THE PROBLEM: *A county courthouse was damaged by fire while a roofing contractor was applying hot asphalt. Was the damage caused by his negligence, thereby entitling an insurance company which had insured the building to collect from him?*

THE ANSWER: Yes. (Oregon Mutual Fire Insurance Co. v. Mathis, 334 Pac.

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Wide-Lites at work on the Wanapum Dam Project

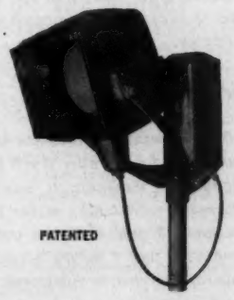
Notice how the broad beam pattern of the two Wide-Lites atop this concrete plant on the Wanapum Dam site flood the working area with shadow-free light. Good lighting like this speeds up work — cuts down accidents!

85 WIDE-LITES speed night operations on Columbia River dam!

On as big a job as the Wanapum Dam Project on the Columbia River, you can't stop work when the sun goes down. But how do you give daylight working conditions on a 24-hour basis to the welders, bulldozers, crane operators and other workers building a sprawling power plant and spillway? Grant County Constructors, sponsored by Morrison-Knudsen Company, Inc., contractors on the Wanapum Dam, does it with 85 Wide-Lites.

Each Wide-Lite with color-corrected mercury vapor lamp will do the work of two or more incandescent floodlights, reducing the number of poles, cross-arms and fixtures required. And Wide-Lites are built for rugged construction use — with cast aluminum alloy bodies finished in epoxy paint for corrosion control. A tempered glass lens protects Wide-Lite's exclusive segmented polished aluminum reflector, and Wide-Lite's patented lamp mounting grips the lamp at both ends to virtually eliminate lamp breakage from shock.

Find out how Wide-Lites can solve your floodlighting problems — and save you money, too! Mail the coupon today.



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For more facts, use Coupon or Request Card at page 18 and circle No. 295

2d 186, decided by the Oregon Supreme Court.)

The court said that the evidence justified a finding that the contractor was negligent in applying hot asphalt to the roof without having provided a fire extinguisher.

The court also decided that a provision in the roofing contract that "the contractor shall not be responsible for delays or damages due to strikes, fire, accidents or causes beyond his reasonable control" could not be construed to release the contractor from liability for fire damage if his negligence was the direct cause of it, since the contract covered only injuries that occurred through causes not under the contractor's control. If he was negligent, then he failed to act as a reasonably prudent person over matters under his control, which included the method and means of carrying out his contract with the county.

Contract deviation ruled no bar to pay

THE PROBLEM: *A contractor failed to follow foundation specifications, but constructed a foundation that was standard and adequate for the type of structure involved, a medical clinic building. There was no special reason why the specifications had called for other than standard construction. Did the deviation constitute a defense against the suit which the contractor brought to collect pay under the contract?*

THE ANSWER: No. (Kizziar v. Dollar, 268 Fed. 2d 914, decided by the United States Court of Appeals, Tenth Circuit, upholding a decision by the United States District Court for the Western District of Oklahoma.)

The court applied the generally recognized rule of law that there is substantial performance of a contract to construct a building when the builder has, in good faith, intended to perform his part of the contract, and has done so in the sense that the building is substantially what is called for by the contract, with no omissions or deviations from the general plan that cannot be remedied without difficulty.

Dragline accident

THE PROBLEM: *A dragline was being moved on a trailer truck along a highway in darkness. It was loaded crosswise, with tracks of the crawler section—13 feet 4 inches wide—extending 2 feet 7 inches beyond each side of the trailer platform. There were no lights. A motorist, driving with his elbow on the window ledge and his left hand on the top of the lowered window, passed the truck. As he did so, his arm was torn off by the protruding crawler tracks. He sued for damages the dragline owner and the motor carrier, which had undertaken to transport the dragline, and their respective liability insurers. A jury awarded plaintiff $80,000 damages against the defendants. (1) Were defendants jointly liable? (2) If so, was the award excessive?*

THE ANSWERS: (1) Yes. (2) No. (Phoenix Indemnity Co. v. Givens, 263 Fed. 2d 858, decided by the United States Court of Appeals, Fifth Circuit, upholding a decision by the United States District Court for the Eastern District of Louisiana.)

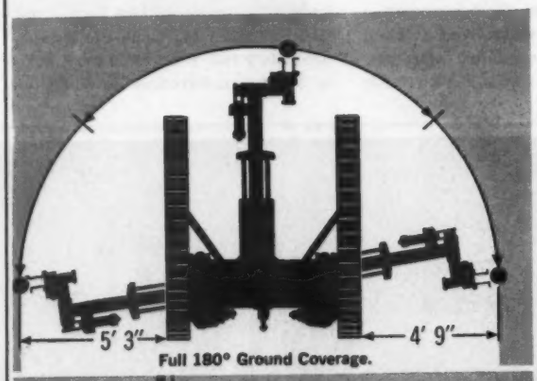
Principal conclusions of the Court of Appeals were these:

The dragline owner was liable because its employee assisted in loading the dragline. The entire liability could not be shifted to the carrier on a theory that it was solely responsible for proper loading of the dragline on the truck. Nor was the carrier solely liable because the dragline was being transported at night without lights and without a required permit from the State Department of Public Safety.

The $80,000 award was not excessive in view of these facts: Plaintiff was 28 years old, married, and had four children. He was illiterate, and the accident precluded job opportunities requiring the use of two hands.

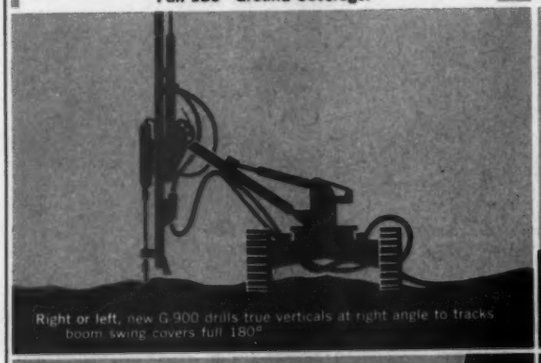
Contractor-architect dispute not arbitrable

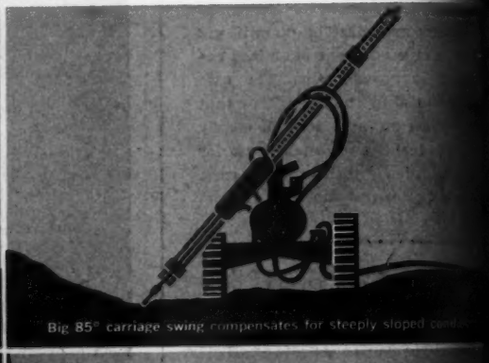
THE PROBLEM: *A municipal building construction contract required the contractor to maintain the work in good repair for one year after the date of the architect's final certificate and also provided that, to prevent disputes and litigation, the architect should determine all questions in relation to the work and materials and*

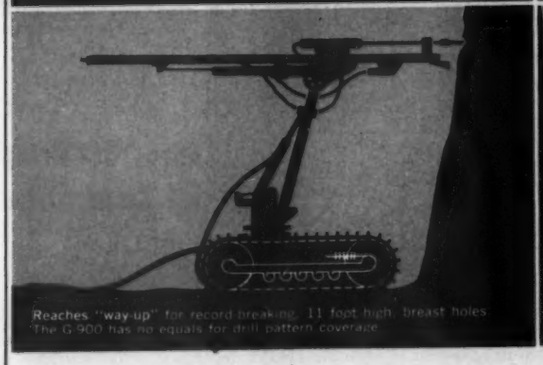


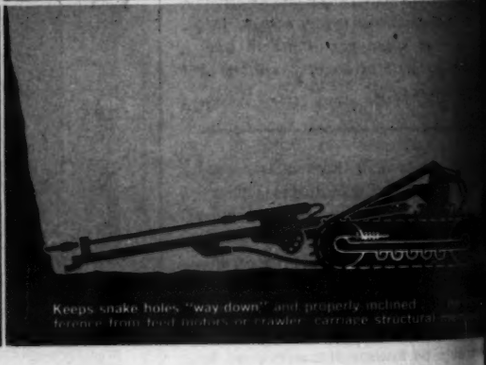
Full 180° Ground Coverage.

UNBEATABL OR


Right or left, new G-900 drills true verticals at right angle to tracks boom swing covers full 180°


Big 85° carriage swing compensates for steeply sloped cond


Reaches "way-up" for record-breaking, 11 foot high, breast holes. The G-900 has no equals for drill pattern coverage


Keeps snake holes "way-down" and properly inclined ... ference from feed motors of crawler carriage structural

IT'S ALL NEW...TODAY'S MOS
ADVANCED CRAWLER-MOUNTE
DRILLING UNIT, G-900 TRACDRI

that his decisions should be conclusive upon the contractor. It further provided that all questions subject to arbitration under the contract should be submitted to arbitration, but it listed no matters as being so subject. Were disputes arising between the contractor and the architect subject to compulsory arbitration under the terms of the contract?

THE ANSWER: No. (In re Incorporated Village of Valley Stream, 196 N.Y. Supp. 2d 377, decided by the New York Supreme Court, Nassau County.)

The court ruled that the contractor was not entitled to arbitration upon his claim that certain conditions in connection with work which the architect asserted required repair were due to the fault of the architect.

Blasting regulations

THE PROBLEM: *Plaintiff contractor fully performed a contract to blast a ledge on the defendant's land. Was the defendant justified in refusing to pay the agreed compensation merely because the plaintiff had failed to obtain a proper permit and post a bond?*

THE ANSWER: No. (Buccella v. Schuster, 164 N.E. 2d 141, decided by the Massachusetts Supreme Judicial Court.)

The court said that blasting without complying with the requirements of a bond and a permit is not so repugnant to public policy that the defendant should receive a gift of the contractor's services. The landowner, according to the court, had received all to which he was entitled under his contract.

Priority rights to funds

THE PROBLEM: *A contract to construct a city sewer required the contractor to give a performance bond and to furnish all necessary labor, materials, etc. It also provided that the city retain 10 per cent of the monthly payments made to him as security for his performance. The contractor was required to prove payment for all labor and materials. Subcontractors' claims exceeded the amount retained by the city. Did the contractor or the federal government, as the contractor's tax creditor, have any interest in the retained fund?*

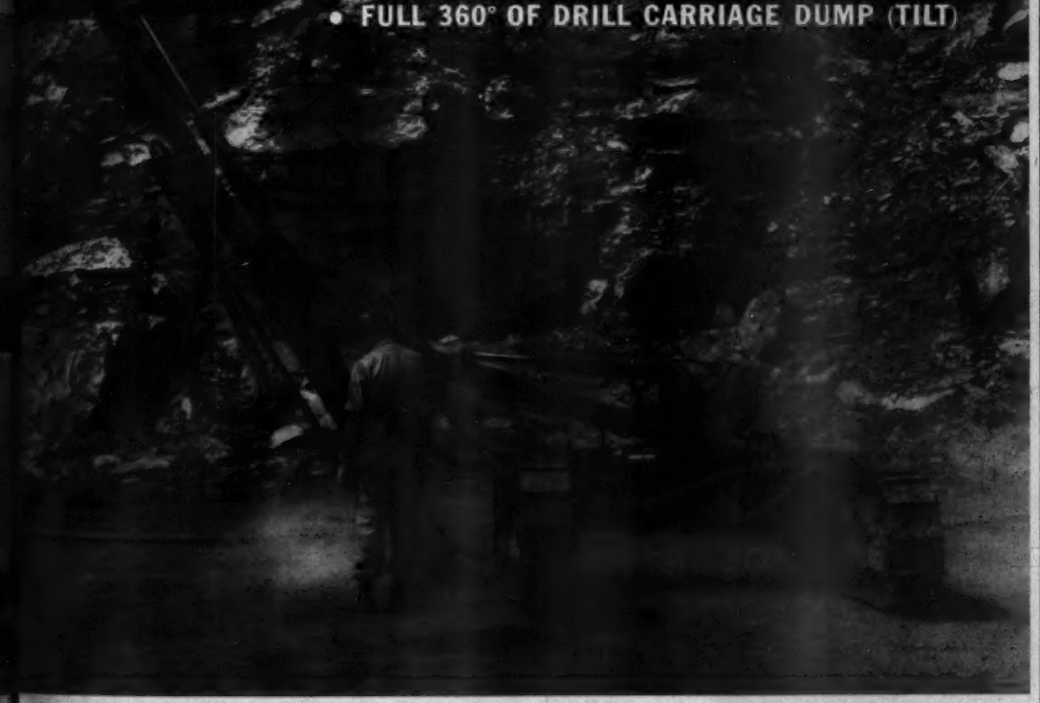
THE ANSWER: No. (United States v. Peden Iron & Steel Co., 330 S.W. 2d 635, decided by the Texas Court of Civil Appeals, Texarkana.)

OR DRILL PATTERN COVERAGE

• 'OVER-THE-SIDE' RIGHT-ANGLE DRILLING

• BREAST HOLES WAY UP AT 11 FOOT LEVEL

• FULL 360° OF DRILL CARRIAGE DUMP (TILT)



...ished versatility . . . drill boom is swung at right angles to tracks and drill carriage tilted inward for steeply sloped conditions.

...of a wealth of field experience and ...years of intensive research Chicago ...matic brings you a self-propelled drill-...unit that experts are calling "the driller's ... . . . it's maneuverable, rugged and ...uctive. With a horizontal boom swing ...180° the new G-900 gives the driller an ...large drilling radius. Dual controls ...turret and boom end give the driller ..., accurate positioning of boom and ... carriage for every job. Solid footing ...ery ground is assured by extra-long ...ers, providing 675 square inches of ...nd contact per track. Husky power from its 12 hp. tramming team, combined with velvet smooth handling, give the G-900 faster spotting and easier sinking of true holes than any comparable rig.

With the sensational 4-1/2" Deep Hole Drill it quickly sinks 3" holes up to 75 feet.

THESE 6 MAJOR ADVANTAGES ARE CP TRACDRIL EXCLUSIVES

1. **"Boarding house reach"** lets the drill carriage stretch out 63" beyond tracks to drill true verticals alongside the unit.

2. **Extra-long Oliver tracks,** specially designed, provide stabilizing ground contact of 1350 square inches.

3. **Sure-footedness and maximum traction** are assured with five lower track wheels.

4. **Seven labor-saving hydraulic cylinders** ease driller's muscle work, give fluid-smooth action.

5. **Two sets of grouped controls,** at turret and boom end, save time and steps for driller, boost footage.

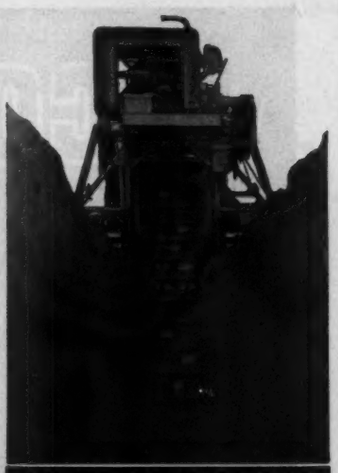
6. **"Dead man" automatic brakes** that slam on when tramming throttle is closed, locking unit on steepest slopes or bad ground.

To get a copy of the new bulletin giving full specifications and details on the new G-900 Tracdril, write for SP-3627 to: *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

Chicago Pneumatic *8 East 44th Street, New York 17, N. Y.*

AIR COMPRESSORS • PNEUMATIC AND ELECTRIC TOOLS • AIR-BLAST BITS • DIAMOND DRILLS • REICHdrills • ROCK DRILLS

For more facts, use Request Card at page 18 and circle No. 360



YOU'RE LOOKING DOWN THE TEETH OF A VERMEER POW-R-DITCHER

From whatever angle you look at it, you'll recognize the big, powerful ditcher that can solve most of your trenching and ditching problems . . . the model 524T Vermeer POW-R-DITCHER. Unit above is digging water main ditch on a large construction project at Lexington, Ky. Ruggedly built to handle the toughest jobs, the POW-R-DITCHER is ideal for municipalities, contractors, utility companies and institutions.

Lowest Priced BIG DITCHER On The Market

The Self-Propelled POW-R-DITCHER digs at variable speeds, 8 to 24 inches wide and down to 6 feet deep. The 524T POW-R-DITCHER is a one-man operated, highly maneuverable unit. Large two-way conveyor deposits dirt on either side of ditch. Has hydraulically controlled steering with separate steering lever for each crawler track. Especially designed for digging wide foundation footings, gas, water and sewage lines. Low in price . . . low in maintenance cost.

Please send me FREE information and prices on the complete line of self-propelled Vermeer POW-R-DITCHERS.

NAME _____

TITLE OR DEPT. _____

FIRM _____

ADDRESS _____

CITY _____ STATE _____

VERMEER MFG. CO.

1437 W. Washington • Pella, Iowa

For more facts, use coupon or circle No. 361

AN AVERAGE OF 1,100 FEET of trench excavation is handled daily by this Model 614 Unit trench hoe with ¾-yard bucket for pipelines crossing the North-South Freeway to service the Utah Oil Refinery and other businesses near Salt Lake City. The work is being done under a subcontract by Dustin C. McMullin, Murray, Utah.

Movie on new A-C scraper

■ The story of the TS-360 motor scraper, woven around the theme of a contractor who designs an all-hydraulic machine to meet his field requirements, has been produced by Allis-Chalmers in a 15-minute, full-color movie. The film, entitled "Lost to the TS-360," explains the production, operating, and mechanical advantages of the new 30-cubic-yard scraper.

It is available for showing from Allis-Chalmers Mfg. Co., Sales Promotion Dept., Tractor Group, Box 512, Milwaukee 1, Wis.

Highway Trailer names manufacturing director

■ Highway Trailer Co., New York, N. Y., has appointed Eugene A. Pelizzoni as director of manufacturing. He was previously vice president of the Crane Carrier Corp., Tulsa, Okla., and was in charge of all manufacturing there.

Highway Trailer, a wholly owned operating subsidiary of Highway Trailer Industries, Inc., produces semi and 4-wheel truck-trailers, cargo containers, and public-utility equipment. Pelizzoni will coordinate manufacturing operations for the company's plants at Edgerton and Stoughton, Wis., and Hazleton, Pa., and at the factory branch in Newark, N. J.

The public-utility division of the company has appointed D. W. Elliott chief engineer. For the past five years he has been vice president and general manager of the Elliott Mfg. Co., an Omaha, Nebr., firm which he founded. Elliott's headquarters will be at the Stoughton, Wis., plant.

Curtiss-Wright acquires rights to Swench wrench

■ Exclusive manufacturing and sales rights have been acquired by Curtiss-Wright Corp. from Swenson Engineering, Branford, Conn., for the Swench wrench. Production of this manually operated impact wrench will start immediately at the Marquette Division's Cleveland plant.

The Swench wrench builds up power in a super-strong spring that is released as torsional impact each time the handle is advanced slightly more than 30 degrees. The self-contained unit is one-man operated. Three models will be produced, ranging in weight from 11 to 78 pounds, and adapted to bolts that range from ½ inch to 2½ inches.

Centriline names district manager

■ The Philadelphia area of the Centriline Corp., a subsidiary of Raymond International, Inc., New York, N. Y., has been assigned to Arthur S. Hicks as district manager. He was previously manager of water-line sales for the Dresser Mfg. Division of Dresser Industries, Inc.

Centriline specializes in the renovation of underground pipe lines by cleaning and lining.

It could well be costing you important time because of slower job cycles. This time is money you'd be saving with TORQMATIC DRIVES in your equipment—and the proof is on TORQMATIC owners' books.

For these owners have their operators quick-shift at *full throttle*—never any power interruption. No more pumping of clutches and timing of shifts. What's more, they don't need a booster tractor to get moving in goo or gob. And these owners free their engines from the shock loads and strains which clash-boxes cause. Ending equipment damage saves them about $1,500 to $2,000 every time they train a rookie driver. Another $800 or more goes into the bank each year because they've wiped out engine-disconnect clutch costs.

The reason? TORQMATIC is controlled by a single, small shift lever. There's no leg-tiring disconnect clutch. TORQMATIC *automatically* adjusts engine power output and speed to load or terrain changes, absorbing harmful and expensive shock loads. It provides a steady, increasing torque to the wheels for a smooth standing start.

The men who are making the extra money—who are underbidding you on your contracts—are probably the men who have switched to TORQMATIC. They *know* they'll more than make up the initial extra cost of TORQMATIC in savings alone. You could, too. So see your equipment dealer or write Allison.

Allison Division of General Motors
Indianapolis 6, Indiana
In Canada: General Motors Diesel Ltd., London, Ontario

Allison TORQMATIC

TORQMATIC® DRIVES
THE MODERN DRIVE FOR MODERN EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 296

PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

Rubber-tire excavator has 2¾-yard bucket, 24,000-pound break-out force

The availability of its Model 966 Traxcavator is announced by the Caterpillar Tractor Co.

Similar in over-all design and machine configuration to the 944, the 966 is a 140-net-horsepower unit with a 2¾-cubic-yard bucket as standard equipment. Special features include the open cockpit, which permits easy accessibility from either side, and the location of all loader lift mechanism ahead of the compartment.

The 966 has a maximum lift-height capability of 154 inches, with a maximum reach of 35⅜ inches at that height. At ground level, it has 41 degrees of bucket tilt-back. The machine is capable of a 24,000-pound break-out force. Turning radius measured at the outside rear tire is 20 feet 9 inches, and ground clearance is 17½ inches.

Equipped with a 2-speed power-shift transmission, the 966 has four operating speeds. A hydraulically actuated bucket positioner is standard.

Power is supplied by a 6-cylinder turbocharged diesel engine rated at 205 horsepower. A 24-volt direct electric starting system is standard, and a gasoline starting system is available as optional equipment.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 97.

Announce new self-contained drill for crawler or truck-mounted cranes

A self-contained drill that can be mounted on any standard ¾-ton crawler crane or 1-yard truck-mounted crane is announced by Calweld, Inc.

The drill attachment, Model 150-C, uses its own power unit for digging and is independent of the crane power source. It can be mounted or demounted in an hour or less without special tools. One-man operation from the crane cab is obtained through hydraulic controls, and all digging operations are in plain view of the operator.

The Model 150-C bores straight, smooth holes from 12 to 120 inches in diameter, at up to 45 feet per hour, with no manual or other finishing operations required.

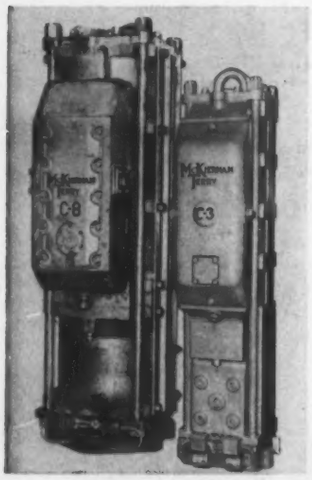
Other features of the Model 150-C include a hydraulic drill positioner and boom stop combination that provides accurate slant drilling to a 1:3 batter. Telescoping models permit drilling to a depth of 150 feet without the need for additional drill stems. Holes as deep as 200 feet can be bored.

For further information write to Calweld, Inc., Dept. C&E, 7222 E. Slauson Ave., Los Angeles 22, Calif., or use the Request Card at page 18. Circle No. 46.

Two new models added to pile-hammer line

The McKiernan-Terry Corp. announces two new C-Type double-acting pile hammers, the Model C-3 and the C-8.

The new models follow the design of the basic C-5 hammer and its operating cycle, which allows a high rate of energy output at low steam or air consumption. The line is said to feature self-seating valves that eliminate need for additional air or steam as the hammer ages, and high-speed operation combined with low striking velocity comparable to that of single-acting hammers.



New double-action hammers in the McKiernan-Terry line have high-speed operation coupled with low striking velocity.

The 8,500-pound C-3, delivering 130 to 140 blows per minute in average driving, works with either a 500 or 600-foot air compressor, or a McKiernan-Clayton steam generator (WOM 110) using 1,350 pounds of steam per minute. Its work scope covers wood piles, most gages of steel sheeting, and other piles of up to 60-ton bearing.

The C-8 operates with a 900-foot air compressor or the McKiernan-Clayton WOM 110 at 2,600 pounds of steam per minute. It delivers 77 to 85 blows per minute and weighs 18,750 pounds. It is designed to drive heavy piles—pipe, concrete, and H-beam—to bearings of up to 125 tons.

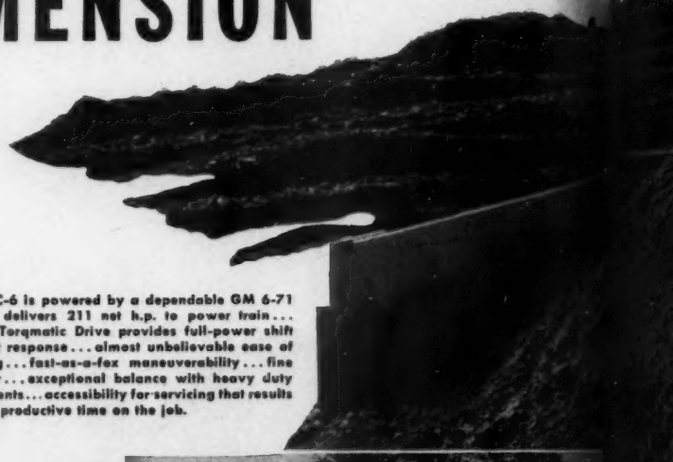
Like the C-5 hammer, the C-3 and C-8 have the ram over-travel safety feature which prevents damage to the one-piece ram and to hammer parts if the pile breaks or it suddenly drives through a soft stratum and the anvil block is left unsupported. In either case the hammer will not function. The C-Type hammers need not be throttled when starting a pile or when using the "free hanging" method of driving.

C-Type hammers are completely enclosed to protect the mechanism from sand and dirt damage, and safeguarding workmen.

For further information write to the McKiernan-Terry Corp., Dept. C&E, 100 Richards Ave., Dover, N. J., or use the Request Card at page 18. Circle No. 114.

This bituminous distributor is available from Littleford Bros., Inc. A Spray Master model, its features include single handwheel control, a shot meter, bar meter, a torque limiter, and flues that permit heating a small quantity of material. A Uniflo full circulating spraybar provides even starts and instant shutoff without dripping. For further information write to **Littleford Bros., Inc.**, Dept. C&E, 457 E. Pearl St., Cincinnati 2, Ohio, or use the Request Card at page 18. Circle No. 22.

EUCLID'S GREATER DIMENSION



Model C-6 is powered by a dependable GM 6-71 engine; delivers 211 net h.p. to power train . . . proven Torqmatic Drive provides full-power shift and fast response . . . almost unbelievable ease of handling . . . fast-as-a-fox maneuverability . . . fine visibility . . . exceptional balance with heavy duty attachments . . . accessibility for servicing that results in more productive time on the job.

The C-6 has the speed, power and maneuverability to handle every kind of tractor job . . . ripping, dozing, push loading, clearing, towing and other heavy work. Many major components including Torqmatic Drive, engine, and planetary drive axle have been job proved in thousands of Euclid earthmovers. Owners say that full-power shift, easy operation and fast response give the C-6 more work-ability than any other crawler in the 200 h.p. class.

Facts and figures on the Model C-6 and Model TC-12 "Eucs" are available from the Euclid dealer in your area . . . get in touch with him soon!

Greater Dimension in power and performance . . . TC-12 has 2 engines that deliver a total of 425 net h.p. . . . independent track drive with separate power train and Torqmatic Drive for each track . . . full-power shift and instantaneous reverse . . . 8 track rollers . . . unequalled accessibility for servicing . . . maneuverability and workability that have set new standards of big tractor performance.

Proven Torqmatic Drives deliver a smooth flow of power to each track . . . with full-power shift there's no delay for clutching and shifting . . . change direction with a flick of the wrist . . . 425 total net h.p. is automatically matched to every job requirement . . . rigid track alignment maintained by independently suspended track frames and final drives . . . years-ahead engineering reduces downtime and maintenance costs for a better return on investment.

Crawlers without full-power shift are obsolete . . . and costly!

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

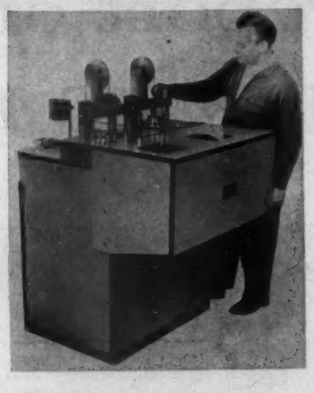
Announce new apparatus for consolidation tests

A new consolidation apparatus with automatic data recording, designed to determine the probable time-settlement characteristics of soils under load, is offered by Soiltest, Inc.

Called the British autographic consolidation apparatus, the machine has a maximum capacity of approximately 28 tons per square foot on a standard 2½-inch-diameter test specimen.

The recording mechanism is sensitive to .0001 inch of consolidation. The dual-type tester is supplied with all operating equipment including weights, dial indicators, and consolidometers. The machine is 34 inches wide, 42 inches deep, and 32 inches high. It weighs 450 pounds.

For further information write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Illinois, or use the Request Card that is bound in at page 18. Circle No. 6.



With data obtained with this autographic consolidation apparatus, the settlements of a building, bridge abutment, or similar structure may be predicted and the design based on these factors.

Concrete tamping tool cuts finishing time

A Jitterbug roller available from the Goldblatt Tool Co. is said to speed up concrete tamping, improve final slab quality, and cut finishing time.

Easy to operate, the tool is used just like a float. The operator pushes it out over the slab and pulls it back toward him. In this way, he can tamp a strip 35 inches wide across the pour by pushing the roller out and back several times.

Ninety-one steel rods mounted on 15-inch-diameter wheels ride the mix to push the larger aggregate just below the surface, out of the way of the finishing trowel. The long-handled operation ends "wading" in the mix and slushing grout into the workman's footprints. The 12-foot magnesium handle on the tool is interchangeable with the extension handles on Goldblatt long-handled floats.

For further information write to the Goldblatt Tool Co., Dept. C&E, 1910 Walnut St., Kansas City 41, Mo., or use the Request Card at page 18. Circle No. 110.

New megaphone projects clear speech one mile

The Super-Hailer, a one-piece, waterproof 16-watt-output megaphone, is offered by the Audio Equipment Co., Inc.

Rated at 120 db at 5 feet, the unit is said to blast through the severe adverse noise levels encountered on construction sites. Under good conditions, it is capable of projecting clear speech over one mile.

The transistor-powered amplifier runs on 10 self-contained "D"-size flashlight cells. Weight of the all-aluminum megaphone is 6¾ pounds.

For further information write to the Audio Equipment Co., Inc., Dept. C&E, 75 Harbor Road, Port Washington, N. Y., or use the Request Card that is bound in at page 18. Circle No. 102.

◀ For more facts, use Request Card at page 18 and circle No. 297

IN MODERN CRAWLER DESIGN

With over twenty-five years of experience in building heavy earth-moving equipment exclusively, Euclid offers a greater range of types and capacities, a greater background of field experience, and a greater return on your equipment investment.

One example of this greater dimension was the introduction of the Model TC-12 Crawler over 5 years ago. Here was an entirely new concept of tractor design . . . two engines, each driving a separate track through its own Torqmatic Drive . . . unequalled power and work-ability . . . performance that set a new standard of crawler productivity . . . ease of operation and servicing that is still unsurpassed in the industry.

Recently the Model C-6 Euclid tractor went into production after the most comprehensive field trials and proving ground testing ever given any new Euclid model. It, too, has Torqmatic Drive and full-power shift as well as many of the advanced design features of the bigger TC-12. And like the "Twin", the new C-6 utilizes major components that have been job proved in thousands of "Eucs" in construction, mine and quarry service. For instance, the Allison converter and semi-automatic transmission "package" has long since passed the pioneering and development stage . . . it's been used in "Euc" scrapers, rear-dump haulers and other models for years. These two Euclid crawlers provide so much more work-ability that they obsolete tractors without the operating advantages of full-power shift.

EUCLID Division of General Motors • Cleveland 17, Ohio

Owners report on
4-in-1 BUCKET PERFORMANCE

We say a "PAYLOADER" equipped with a Drott 4-in-1 bucket is a clamshell, scraper, bulldozer and shovel. But enthusiastic owners spell out in their own words what this combination has meant to them in on-the-job versatility and earning power:

Vice President says, "The "PAYLOADER" with 4-in-1 bucket is the best piece of equipment we ever purchased. It will move more dirt than any other two competitive loaders that we have ever owned. It will do *anything*. We don't know how we ever did a job without it."

Superintendent says, "The 4-in-1 versatility really comes through on this water pipe line contract. Our "PAYLOADER" is continuously busy doing jobs that would be impossible with straight-bucket machines. Also cuts time in the operation."

Owner says, "Our H-70 with 4-in-1 bucket is known as our third hand. This fact is proven daily by its unique versatility, practically eliminating hand labor. It can do clean-up work without excessive maneuvering. We have *controlled* material handling with the 4-in-1."

Foreman says, "The 4-in-1 versatility on rubber tires makes it the most useful single machine in my 15 years of pipe work."

Superintendent says, "We had a lot of cedars to remove on this job. By just lowering the open bucket down over the top, then closing the clam we yanked them out like pulling teeth. I figure the machine was making $100.00 an hour. We also took out and loaded 1/3 mile of old railroad ties in just 4 hours. With the clam open we peeled out 6 or 8 ties at a time, closed the clam and lifted them directly into the truck—just like taking the skin off an orange."

Five "PAYLOADER" sizes are available with exclusive-on-rubber Drott 4-in-1 buckets—in 1, 1⅛, 1¾, 2¼ and 4 cu. yd. capacities (S.A.E. rated). Your Hough Distributor has full information on these and many other profit-making "PAYLOADER" attachments.

THE FRANK G. HOUGH CO.
762 Sunnyside Ave., Libertyville, Ill.

☐ Send PAYLOADER-4-in-1 bucket data
☐ Send data on other PAYLOADER attachments

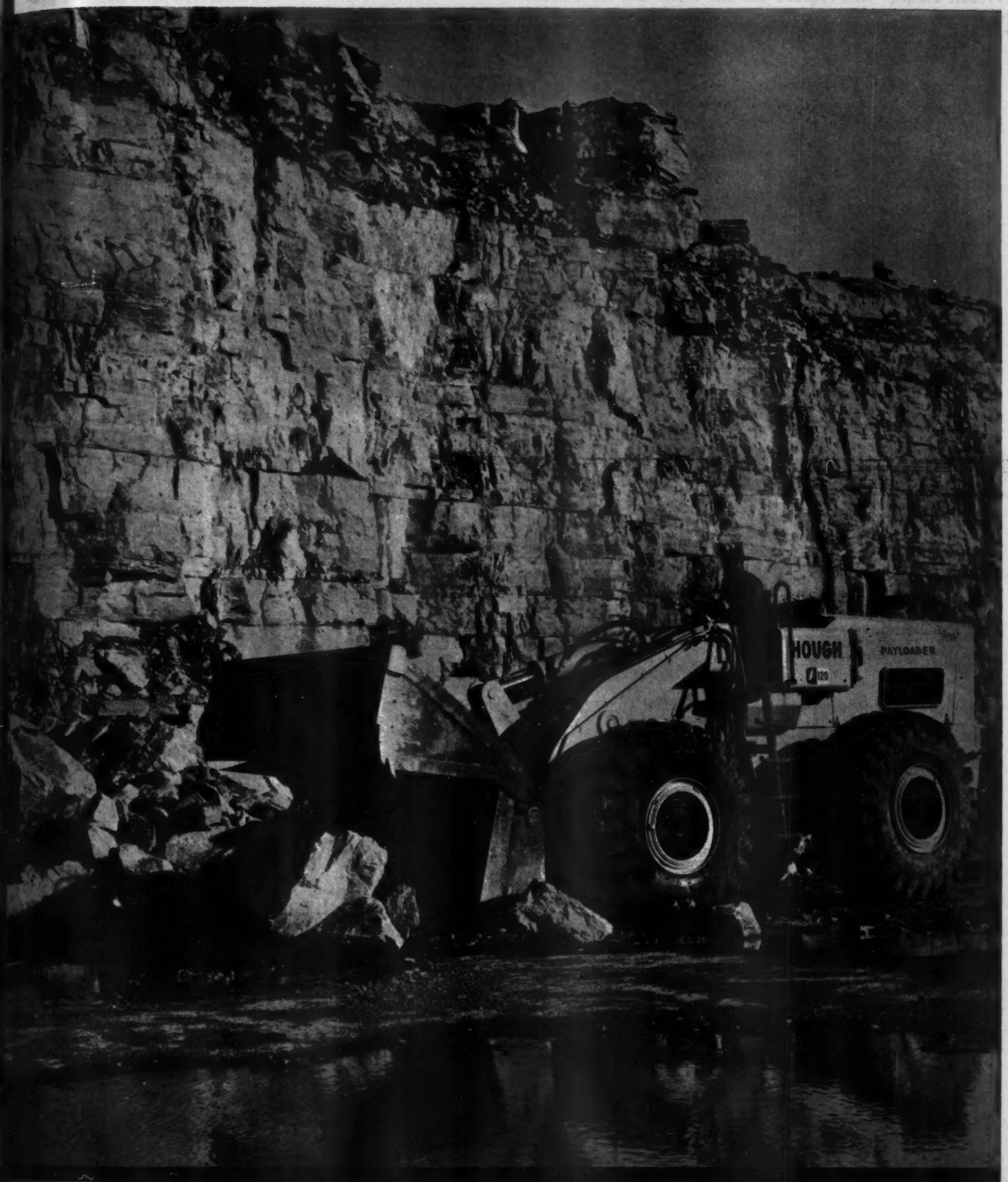
Name _____
Title _____
Company _____
Street _____
City _____ State _____

8-8-1

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

HOUGH®

For more facts, use coupon or Request Card at page 18 and circle No. 298



The 4-cu. yd. Drott 4-in-1 bucket and the boom arms of the big H-120 "PAYLOADER" are made of premium, triple-strength "T-1" steel. This eliminates over a ton of dead weight and increases payload capacity.

PAYLOADER®

For more facts on Calf spread on Insert, use coupon or Request Card at page 18 and circle No. 303

The Massey-Ferguson No. 5 angledozer can be angled at 17, 24, or 28 degrees, either left or right. It can also be offset 7 inches either side of center.

Angledozer attachment is versatile unit

The new Massey-Ferguson No. 5 angledozer—a rugged, hydraulically controlled atachment for M-F tractors—provides wide utility in cleanup and landscape work or for backfilling ditches, trenches, and around foundations and other excavations.

The dozer blade has a 25½-inch moldboard height with a 6-inch reversible high-carbon-steel cutting edge. A choice of 72 or 84-inch dozer blades is offered.

Hydraulic up-and-down control of the blade is provided by the double-acting, hydraulic lift cylinders with down pressure (standard equipment).

The dozer can be mechanically angled at 17, 24, or 28 degrees, either left or right, and can also be set in an offset position 7 inches either side of center.

Either the tractor's hydraulic system or the dozer's own independent hydraulic system can be used. Using the tractor's system requires a standard 2-spool, 2-way auxiliary control valve; a third spool may be added when hydraulic tilt is desired. The independent hydraulic system gives a faster response and is "live" even when the tractor is stationary.

For further information write to Massey-Ferguson, Dept. C&E, 1009 E. West St., Wichita, Kans., or use the Request Card at page 18. Circle No. 33.

Metal-arc spot welder handles variety of work

A new metal-inert-gas-shielded-arc spot-welding unit has been added to the line of Hobart automatic and semiautomatic arc-welding equipment.

With this unit, mild steel, galvanized carbon steel, stainless steel, aluminum, and other metals .030 inch to ¼ inch can be spot-welded from one side only. The unit can also be used to plug-weld metals ⅛ inch thick or more. Space welding, tack welding, and bead welding can also be accomplished.

The equipment is said to be capable of producing over 20 spots per minute using carbon dioxide, argon, helium, and other gas-shielding mixtures depending upon the welding application.

For further information write to the Hobart Bros. Co., Dept. C&E, Hobart Square, Box 8129, Troy, Ohio, or use the Request Card at page 18. Circle No. 88.

Enclosed hopper trailer hauls big legal payload

A new, enclosed Monc-Shell hopper trailer for the hauling of bulk materials has been announced by Gar Wood Industries, Inc.

The Mono-Shell design makes possible, according to the manufacturer, an exceptionally large legal payload. With this type of construction the contours of the body itself constitute all the required strength and support, eliminating truss frames, body longitudinals, and cross braces. Units are available in both semitrailer and train assemblies.

"Butterfly" gates seal the load completely from dirt and water, yet allow for fast, safe dumping. Solid or split butterfly gates are available. With the split butterfly gate the contractor can haul both powdered or granular materials and aggregates up to 1½-inch diameter.

A removable sock assembly is

CROSBY-LAUGHLIN Load-Rated® TURNBUCKLES

- Guaranteed Rated Capacities
- More Complete Range of Sizes
- Any Combination of End Fittings

Ask your distributor for complete line catalog

CROSBY-LAUGHLIN *Division*

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Fittings For Wire Rope and Chain

INDUSTRIAL DISTRIBUTORS — THE RIGHT HAND OF PRODUCTION

For more facts, use Request Card at page 18 and circle No. 299

NEW GORMAN-RUPP All-Purpose Portable HANDY PUMP

Flooded Basement

Standby Use

Around the Farm

Bilge Pumping

Spray or Wash

Self-priming centrifugal with motor. Weighs only 13 lbs. Pumps up to 950 GPH. Uses garden hose. Sturdy aluminum body. Series motor, 7800 RPM, 115 volts. High-gloss metallic finish. Supplied with hose adapter, suction strainer, motor protector, 3-wire connector, ground adapter. A portable pump with 1000 uses, now only . . . $74.95

THE GORMAN-RUPP CO., MANSFIELD, OHIO

Send Free Handy Pump Folder and name of nearest dealer.

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Most valuable use to me: ☐ Farm ☐ Home ☐ Boating ☐ Business

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CONTINENTAL RED SEALS ARE ENGINEERED TO FIT THE JOB

Rarely will you find an item of industrial, construction or road building equipment that won't run best and cheapest on Continental Red Seal power. The reason lies in specialization—in Continental's long-standing policy of engineering each model precisely to the work to be done. Whatever the machine . . . whatever its job . . . you can bank on it for abundant power at the speeds consistent with low fuel and upkeep cost.

●

Continental's ruggedness and rightness of design are helping to build prestige for more and more of the leading builders of specialized power equipment. It's wise when buying equipment of this type, to choose a make with dependable Red Seal power—power backed by specialized experience dating from 1902.

●

FACTORY-APPROVED PARTS AND SERVICE EVERYWHERE

Continental Motors Corporation

MUSKEGON MICHIGAN

For more facts, circle No. 301

WIN MORE STEEL SETTING BIDS!

put the EARNING POWER of a UNIT on your *lift* jobs

This 20 ton UNIT Model 1520T truck crane is setting steel for a power line atop Mt. Frances in Utah.

How many steel erection jobs like this have you lost because of the wrong type of equipment? To win more contracts of this nature you need a truck crane that can move in fast, yet have the reach and power to handle heavy beams at maximum heights.

UNIT TRUCK CRANES offer *true* mobility — road speeds up to 42 MPH — power and traction to meet the roughest off-the-road conditions. Power flows in a direct line to the tandem rear axles — maintains balance and uniform braking action on all rear wheels.

UNIT TRUCK CRANES put a wide range of power, plus precise control at your fingertips. No other cranes have a one-piece, cast gear case. This unique feature gives you perfect, compact machinery alignment for the most efficient performance. Double disc clutches provide the smoothest operation — are completely interchangeable. New oversize, ventilated brakes give you precise, accurate control for spotting loads. Independent boom hoist permits power raising and controlled lowering of boom at high speeds.

UNIT TRUCK CRANES are easy to operate and maintain. The roomy, Full Vision cab gives you an unrestricted, 360° view; has ample head room and large, super-safe, heat tempered glass windows. Sliding side panels and wide hood covers give spacious access to the crane motor and clutches.

UNIT TRUCK CRANES are built in five size ranges — 10, 15, 20, 30, and 35-40 tons — to handle most any lift job. Convertibility to all excavator applications brings you a plus value. Your UNIT dealer has full information on every model — and the famous UNIT crawler-mounted machines, too. Call him soon.

SHOVELS ½ to ¾ YDS.
HOES ½ to ¾ YDS.
CRANES 5½ to 40 TONS
DRAGLINES ½ to ¾ YDS.

UNIT
CRANE & SHOVEL CORP.
6309 W. Burnham Street
Milwaukee 19, Wisconsin

For more facts, use coupon or Request Card at page 18 and circle No. 302

Washington Memorial Parkway contractor ahead of schedule

GULF MAKES THINGS

When the George Washington Memorial Parkway is completed . . . from Mount Vernon to Great Falls, Virginia . . . it will be one of the nation's most beautiful parkland drives.

Barnhill Construction Company of Tarboro, North Carolina, has the job of excavating and draining a difficult 1⅞-mile stretch of the parkway.

"We're primarily flatland people," says Everett Poindexter, Engineer and General Superintendent for Barnhill. "On this job we've got the hills and we've also got to preserve as much of the natural beauty as possible. This includes saving thousands of dogwood trees."

Even though such a garden-type project tends to slow dirt moving, Barnhill is well ahead of schedule. To achieve this, Barnhill keeps its equipment in prime condition and avoids mechanical delays with the help of Gulf products and service.

To insure peak performance, Barnhill uses Gulf® Super-Duty Motor Oil, Gulf® diesel fuel, Gulf® Multi-Purpose Gear Lubricant, and Gulflex® multi-purpose grease. When Barnhill moves to a new area, Gulf fuels and lubricants are delivered to the job site even before

Barnhill Contracting Company lubricates pushers at lunch time and rubber-tired equipment at the end of the day.

Melvin J. Cottrell (left), Project Superintendent for Barnhill, with Allen Ford, Gulf Sales Engineer. Capable engineering counsel is an essential part of Gulf service to every industry.

with help of Gulf® products and service . . .

RUN BETTER!

the equipment arrives. Information about parts supply houses and other helpful data on local conditions is provided by Gulf men. Says Melvin Cockrell, Barnhill Project Superintendent: "This Gulf service is most helpful to us."

On your next important project, see for yourself how Gulf makes things run better! Just call a Gulf Sales Engineer at your nearest Gulf office. Meanwhile, mail in this coupon for your free copy of the 88-page booklet: "Gulf Contractors' Guide"—the lubrication and maintenance manual for heavy equipment.

GULF

GULF OIL CORPORATION
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

Please send copy of "Gulf Contractors' Guide."

Name_____

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Company_____

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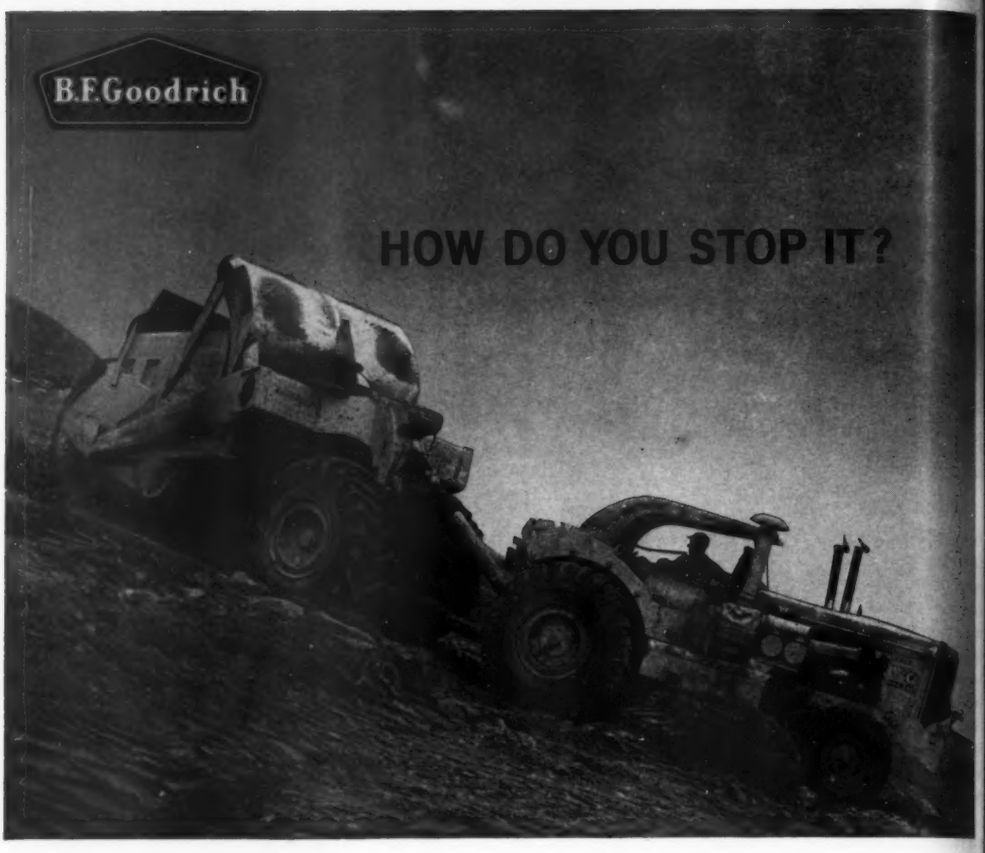
City_____ Zone____ State_____

SP-9855



Hi-Torque brakes give uniform pressure, *full circle contact.* This provides maximum effective braking surface in the same size unit...double the braking power.

HI-TORQUE BRAKES!

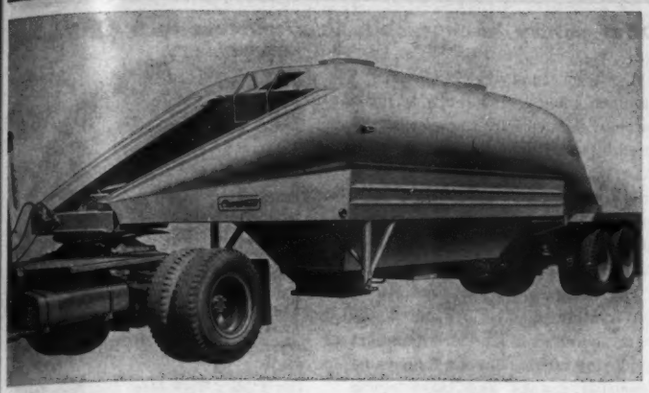
B.F.Goodrich Hi-Torque brakes cut stopping distance approximately in half, compared to conventional two-shoe brakes tested on identical vehicles and loads. The added safety factor with these brakes means you can haul bigger loads more safely, operate on faster cycles. More difficult off-highway jobs can be tackled.

For *double the braking power* on your heavy weight vehicles, specify Hi-Torque brakes as original equipment. These brakes are now available on heavy dump trucks, tractor-scrapers, coal haulers, mine trucks and other big vehicles, from several manufacturers.

For complete information ask the manufacturer of your equipment, or write *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Dept. CE-8, Akron, Ohio.*

B.F.Goodrich Hi-Torque brakes

For more facts, use coupon or Request Card at page 18 and circle No. 304



When fitted with the split butterfly gate, the Gar Wood Mono-Shell hopper trailer can haul both powdered or granular materials and aggregates up to 1½-inch diameter.

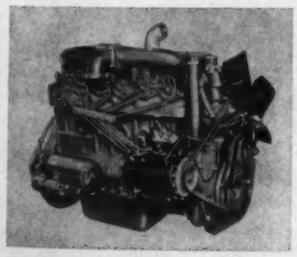
attached to protect the load during discharge. The units may be compartmentalized, each with its own discharge gate, for hauling two or more different commodities at once. Loading hatches have vented self-locking covers that allow free "breathing" yet keep water out. The trailers are fitted with either permanent or removable aluminum domes for diversified hauling as both an open or enclosed body.

For further information write to Gar Wood Industries, Inc., Dept. C&E, 36253 Michigan Ave., Wayne, Mich., or use the Request Card at page 18. Circle No. 20.

Lightweight diesel engine for medium-duty trucks

Introduction of a lightweight diesel engine for medium-duty International trucks is announced by the Motor Truck Division of the International Harvester Co.

The new heavy-duty, high-speed Model D-301 engine has a piston displacement of 301 cubic inches, is nat-



urally aspirated, and delivers 110 horsepower at 3,000 rpm.

Features are said to include high torque output at low speed, low fuel consumption, and long operating life with fewer service requirements. The weight of the engine is 902 pounds.

Direct electric starting and a simplified fuel system are other features of the 6-cylinder engine, which is designed to obtain maximum power from No. 2 diesel fuel.

For further information write to the International Harvester Co., Motor Truck Division, Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 2.

New spreader features 35-foot coverage area

The Hatfield Roto-Werl Spreader Corp. announces a new spreader designed for many tasks of highway maintenance and general municipal service.

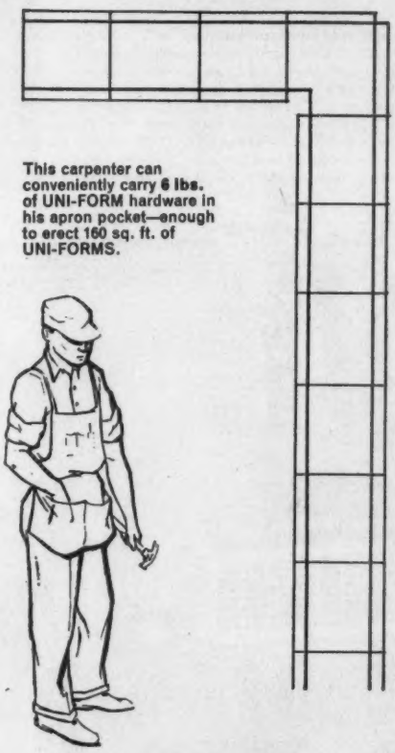
Towed by a tractor or pickup truck, the machine is said to provide an accurately controlled spread rate and an even spread pattern for all granular materials.

The Roto-Werl can be used to spread fertilizer, seed, top dressing, or herbicide. A simple adjustment adapts the unit to deliver a concentrated side spread of weed killer onto road shoulders.

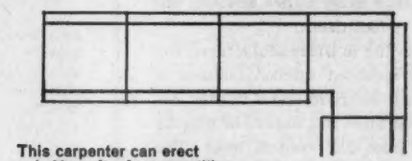
The unit has an effective coverage area of up to 35 feet, depending upon the density of the material used. Open design of its distribution rotors eliminates clogging, and the spreader delivers a pattern said to effectively eliminate gaps and "clumping." An 8-foot hopper carries up to 1,500 pounds.

For further information write to the Hatfield Roto-Werl Spreader Corp., Dept. C&E, Hatfield, Pa., or use the Request Card at page 18. Circle No. 42.

WHICH PREFAB FORM SYSTEM OFFERS MORE PRODUCTIVE FORMING TIME PER DAY?



This carpenter can conveniently carry **6 lbs.** of UNI-FORM hardware in his apron pocket—enough to erect 160 sq. ft. of UNI-FORMS.



This carpenter can erect only 60 sq. ft. of a competitive prefab system's panels with the 6 lbs. of hardware he carries in his apron. **Extra trips for hardware means less productive forming time.**

UNI-FORM SYSTEM

Carpenters can form more contact area per hour with UNI-FORM Panels than they can with any other prefab form system. The reason? It takes less hardware—in most cases, 50% less—to form a given contact area. And UNI-FORM hardware **weighs less, costs less,** and is easier to install.

EXAMPLE: **6 lbs. of UNI-FORM hardware—128 Tie Keys—are required to install 32 UNI-FORM Ties (4 keys per tie).** 32 Ties are required to erect 160 sq. ft. of UNI-FORM Panels.

Cost of hardware required to install 1 UNI-FORM Tie: **LESS THAN 4¢.**
(Tie Keys are re-usable)

COMPETITIVE PREFAB FORM

A leading competitive prefab form system requires 2 tightening wedges and 2 connecting bolts per tie installed. **In 6 lbs. of this hardware, there are only 24 sets of wedges and bolts—enough for 12 ties. 12 ties will assemble only 60 sq. ft.** of this system's panels.

Cost of hardware required to install 1 competitive tie: **36¢.**
(Wedges and Bolts are re-usable)

WHICH PREFAB FORM SYSTEM GIVES YOU FASTER FORM ERECTION AND LOWER COSTS? Want more information about UNI-FORM Panels and the advantages they can bring to your concrete forming? Write today for complete details.

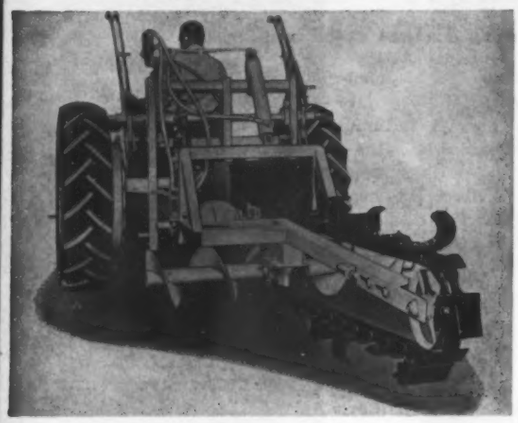
UNIVERSAL FORM CLAMP CO.

"Products from the Gold Toolroom"

1238 N. KOSTNER AVENUE • CHICAGO 51, ILLINOIS

BRANCH OFFICES and WAREHOUSES:
ATLANTA BALTIMORE CLEVELAND HOUSTON
LOS ANGELES SAN LEANDRO TORONTO

For more facts, use Request Card at page 18 and circle No. 305



Designed to fit all 3-point tractor hitches, the 3P Pow-R-Ditcher is powered by the tractor's hydraulic system. The PTO shaft is equipped with a double-disk friction slip clutch for digging safety.

New ditching attachment works off tractor PTO

The Vermeer Mfg. Co. announces a new model Pow-R-Ditcher.

Designated Model 3P, the machine is specifically designed to fit all 3-point tractor hitches. It has a digging width of 6 to 16 inches and will dig to a 4½-foot depth.

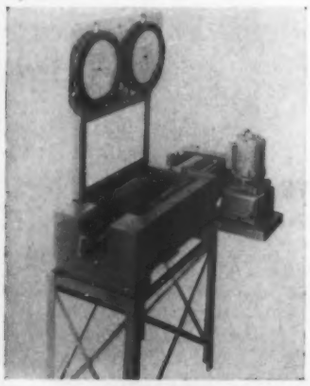
According to the manufacturer, the tractor-mounted ditcher features a hydraulic-actuated travel ratchet device that gives full control of digging speed from one control lever. The power is taken from the tractor's hydraulic system.

For further information write to the Vermeer Mfg. Co., Dept. C&E, 1437 W. Washington, Pella, Iowa, or use the Request Card at page 18. Circle No. 17.

Tension-testing machine is multipurpose unit

Forney's, Inc., announces the new Model TM-100 tension machine designed especially for pulling No. 2 to No. 11 reinforcing bars.

Two ranges are available as standard equipment: zero to 30,000 pounds,



and zero to 250,000 pounds. Two sets of gripper blocks handle all sizes, including No. 2 and No. 11.

The manufacturer advises that the TM-100 can be arranged to test stranded cable in tension and 6×12-inch cylinders in compression, thus making it a multipurpose apparatus.

For further information write to Forney's, Inc., Tester Division, Dept. C&E, P. O. Box 310, New Castle, Pa., or use the Request Card at page 18. Circle No. 94.

Offer rotary hammer bits in diameters to 6 inches

A new tungsten-carbide-tipped hammer bit in sizes of 3/16 inch through 6 inches in diameter is offered by the Tilden Tool Mfg. Co.

Designated Hammerkore, these bits are of the solid chisel-point type through ⅝ inch, and of the core type with core slot in the larger sizes having multiple carbide cutters.

The hammer bits will operate in self-rotating electric or air hammers, as well as in standard hammers employing turning chucks. Removable extension shanks and extra-length bits are available for 1⅛ through 1½-inch sizes.

For further information write to

the Tilden Tool Mfg. Co., Inc., Dept. C&E, 209 Los Molinos, San Clemente, Calif., or use the Request Card at page 18. Circle No. 7.

Foremans' choice! This INTERNATIONAL pickup keeps the job moving by transporting key personnel, critical supplies or what have you to those important locations. Comfortable cab has 5 ft. wide seats, extra head-room. Take your choice of standard all-steel bodies or "Bonus-Load" bodies up to 8½-ft. long. A 266 cu. in. displacement V-8 engine gives outstanding power and gas mileage.

Ideal for servicing equipment and transporting supplies! Hauling loads any place you have to go, INTERNATIONAL stake models increase the speed and efficiency of your operation to cut down on costs. Heavy-duty brakes and springs mean longer life on rough jobs; wide cab seats three men comfortably. True-truck V-8 engines up to 197 hp. are standard to give you outstanding acceleration, constant road speed. Sturdy, economy "sixes" or the new economical INTERNATIONAL D-301 diesel engine are also available. Stake models up to 25,500 lbs. GVW give you a choice of regular or all-wheel-drive — factory installed stake bodies from 8 to 16 ft. long.

Together or individually

THEY BALANCE

These INTERNATIONAL® Trucks are only three examples of the large variety of units that INTERNATIONAL offers the construction field. They can supply an ideal balance to your operation with their speed and maneuverability. Combined with INTERNATIONAL dependability and rugged design, this all results in helping you get the job done right and on time... and totals up to bigger profits.

Stop in soon and see your INTERNATIONAL Truck Dealer or Branch for more details on the trucks built to boost your profit picture.

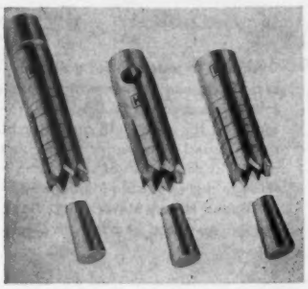
Self-drilling anchors offered in three types

Holub Industries, Inc., announces a complete line of 14 self-drilling anchors that includes types for hand or power installation.

Designated Hi, the anchor is a combination drill and fastener that incorporates new features to produce fast drilling and maximum holding power. Each anchor has 8 cutting teeth of special design and shape to assure fast, clean cutting action. Diamond or carbide drills are not required.

The anchors are offered in three types.

For further information write to

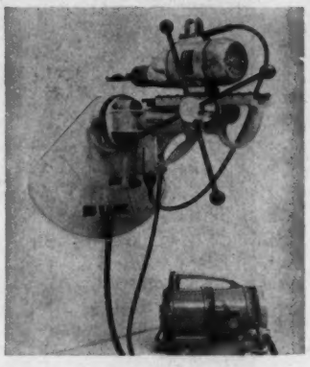


Holub Industries, Inc., Dept. C&E, Sycamore, Ill., or use the Request Card at page 18. Circle No. 21.

Suction-cup base for portable drill

The Vacu-Press portable drill, mounted on a base that is, in effect, a giant suction cup, is available from Bux Magnetic Products, Inc. A flexible neoprene rubber seal is built in around the edge of the base so that, when air is drawn from the base by the vacuum pump, a vacuum is created inside that holds the whole unit securely against the wall. It will hold even on irregular or uneven surfaces, states the manufacturer.

The vacuum pump featured with the new drill is a Bell & Gosset oilless unit. Attached to the drill base, this pump creates a vacuum that



puts 3,000 pounds of holding force into the drill unit.

For further information write to Bux Magnetic Products, Inc., Dept. C&E, 1355 N. Tenth St., San Jose, Calif., or use the Request Card at page 18. Circle No. 84.

Noninflammable coating for metal, wooden forms

The Horn Research Laboratories offers Aggretex F, a water-soluble, noninflammable coating for application to wooden or metal forms that are to be used to obtain exposed aggregate surfaces on freshly poured concrete, or rough bonding surface for subsequent concrete or stucco coatings.

It is applied to wood by brush or low-power spray, and to metal forms by brush, unthinned in a continuous unbroken film. Forms may be coated 3 weeks before using.

Under normal weather conditions, concrete may be placed against coated forms after only 3 hours' drying time. A stiff brush or stream of water from a garden hose will remove the retarded surface concrete, exposing clean aggregate, states the manufacturer.

For further information write to A. C. Horn Cos., division of the Sun Chemical Corp., Dept. C&E, 2133 85th St., North Bergen, N. J., or use the Request Card at page 18. Circle No. 57.

Pneumatic-tire roller can vary tire pressures

A new device for subgrade, base, and asphalt compaction with the Model SP-730B self-propelled pneumatic-tire roller is available from Bros, Inc.

The "on-the-run" tire-inflation device for new rollers, as well as a modification kit for all SP-730 rollers now in the field, allows the roller operator to increase and decrease tire pressures quickly during rolling operations.

The inflation kit includes compressor, gages, control stand, air line, and protection covers for each tire.

For further information write to Bros, Inc., Road Machinery Division, Dept. C&E, 1057 Tenth Ave. S. E., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 85.

Ready to "hotshot" crews to any hot spot! This rugged INTERNATIONAL all-wheel-drive pickup can step out and over any terrain your construction crews will encounter. Sturdy design and powerful power-line give them the ability to go where others couldn't offer you the same efficiency. Choose from two pickup body types—extra-capacity "Bonus-Load" or standard. They are all-steel from husky sides and ribbed floor to sturdy, sand-tight tailgate. Take your power from standard V-8 or true-truck "six" engines.

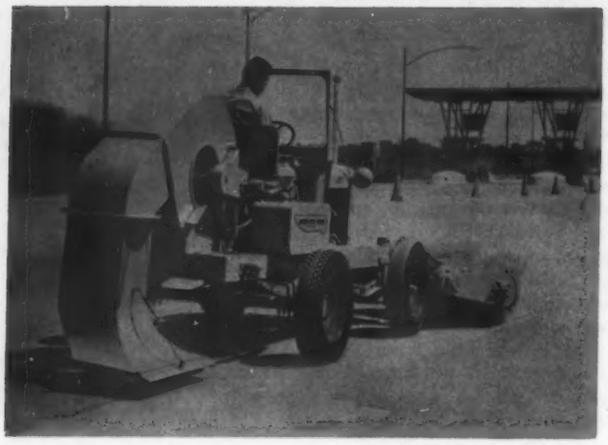
YOUR OPERATION

Extra traction where you need it! INTERNATIONAL Trucks with optional Powr-Lok gives your units the traction to get out of those tough places. By transferring extra driving power to the wheel that can get traction, your truck digs in and out without a tow... relieves the worry over your axle snapping.

INTERNATIONAL® TRUCKS WORLD'S MOST COMPLETE LINE

INTERNATIONAL HARVESTER COMPANY, CHICAGO • Motor Trucks • Crawler Tractors • Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

For more facts, use Request Card at page 18 and circle No. 306



Designed to preclean for guide-line marking, this self-propelled sweeper-blower rig can travel on highways at speeds from 40 to 50 mph. On the job, it has a range of 8 speeds from 1 mph up. The blower is turntable-mounted for right, left, or center blowing. The nozzle swivels a full 360 degrees and is hydraulically actuated with its own hydraulic system completely independent of the broom hydraulic system. The broom is 4 feet wide and is available in either fiber or wire. For further information write to **Topeka Hiway Mower, Inc.,** Dept. C&E, Box 720, Topeka, Kans., or use the Request Card at page 18. Circle No. 56.

Piggy Back

self-propelled vibratory

ASPHALT ROLLER SOIL COMPACTER

Has effect of 8-10 Ton Tandem . . . Rides on Back of Truck . . . Eliminates Trailer!

MODEL CL-21

Meet the newest member of the Terrapac family — the "Piggy Back" CL-21 vibratory workhorse . . . If you're interested in results, not claims, this self-propelled combination asphalt roller-soil compactor can be your most valuable piece of equipment . . . It will consistently achieve high production on asphalt and granular materials . . . Ideal for patch work — rolls flush with curb (frame raised 8" on one side) . . . Never idle — moves from job to job on back of your truck . . . Can be operated by any laborer . . . See this real eye opener — see the "Piggy Back" in action!

AD 41-16

VIBRO-PLUS PRODUCTS, Inc.

STANHOPE, NEW JERSEY

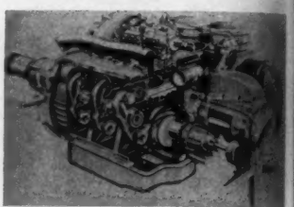
WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES.

For more facts, use Request Card at page 18 and circle No. 307

British-made engine has multi-fuel feature

An engine that runs on high or low-test gasoline, diesel oil, kerosene, jet fuels, or even cleaning fluid is announced by England's Rootes Motors.

The multi-fuel feature depends on



a special type of variable-pressure fuel-injection system that varies the amount of fuel fed into the combustion chambers, depending on the fuel being used.

The basic engine, a 2-cycle 3-cylinder unit, is designed to deliver 106 brake horsepower. Variations in design allow 75 and 85 horsepower ratings as well.

For further information write to Rootes Motors, Inc., Dept. C&E, 42-32 21st St., Long Island City, N. Y., or use the Request Card at page 18. Circle No. 83.

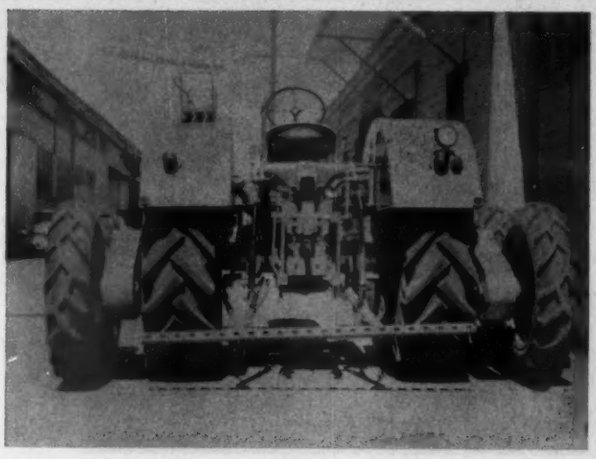
New bolt offered for gang forming

The Symons Clamp & Mfg. Co. has available a gang-form bolt that permits the ganging of any size of Symons form with regular hardware. It is now possible, states the firm, to secure all of the forms required together in sections: The sections are moved into place, ties are inserted, and the unit is then ready for concrete placement.

The bolt may be used with all sizes of forms, including fillers and panels, either vertically or horizontally. It may be removed or added at any time. A slight offset in the bolt provides for straight-line tie action, and the bolt allows the breaking back of ties prior to removing the gang section.

For further information write to the Symons Clamp & Mfg. Co., Dept. C&E, 4249 W. Diversey Ave., Chicago 39, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 41.

Adaptable to most standard wheel tractors, Bogie power wheels give added traction, flotation, and stability.



Auxiliary drive wheels add to tractor traction

Auxiliary drive wheels designed to increase the traction of wheel-type tractors are offered by the Young Iron Works. Increased flotation and stability are other benefits, states the manufacturer.

Known as Bogie power wheels, they can be adapted to almost any standard wheel tractor. Two extra power wheels, chain-driven from the main axle, are attached outside each tractor drive wheel. On each pair, one Bogie wheel is set slightly ahead and the other slightly behind the regular drive wheel. This arrangement of six drive wheels gives the tractor a powered wheelbase covering a larger ground area than usual, and enables it to operate on soft ground and to cross ditches impassable to standard wheel tractors.

The units are easily attached and removed.

For further information write to Young Iron Works, Dept. C&E, 2959 First Ave. S., Seattle 4, Wash., or use the Request Card at page 18. Circle No. 54.

Tungsten-carbide bits for heavy-duty drill

The Gardner-Denver Co. offers new tungsten-carbide insert bits for larger-diameter holes and maximum efficiency with its heavy-duty Mole-Drill.

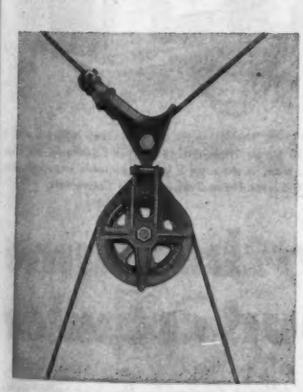
The new bits range from 4¾ to 8 inches in diameter, with the 1000 Series drill steel offered in 6 to 8-inch diameters. The bits can be resharpened many times, according to the company.

For further information write to the Gardner-Denver Co., Dept. C&E, S. Front St., Quincy, Ill., or use the Request Card at page 18. Circle No. 91.

Bridle hitch clamp offered in two sizes

A new fitting available from Sauerman Bros., Inc., is designed to provide a quick way of attaching a load to a bridle cable.

The wedge-type clamp holds the load securely on the bridle. Its saddle



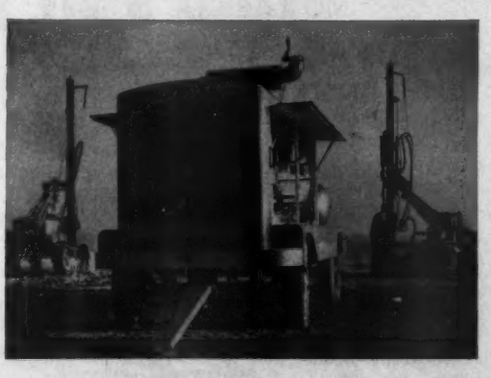
groove is an ideal bearing for the bridle cable and provides a smooth transfer of the transverse load. The bridle hitch clamp has a pin connection for attaching a wire-rope block or other load.

This clamp is available in sizes for ⅝-inch or ¾-inch wire rope. Other continuous-cable clamps are available for rope sizes from ⅜ inch to 1¼ inches.

For further information write to Sauerman Bros., Inc., Dept. C&E, 624 S. 28th Ave., Bellwood, Ill., or use the Request Card at page 18. Circle No. 16.

TOUGH ROCK. On this Rocky Mountain excavation nearly all of the rock was badly fractured and schisted as well as being highly abrasive. Bits lasted an average of only 15 feet. This job was done with crawler drills powered by a battery of Jaeger "600" compressors.

Jaegers cut air costs on tough 1,300,000 cu. yd. Rocky Mountain excavation



A Jaeger rotary "600", using the same GM 6-71 diesel engine as used in other "600" rotaries, delivers its rated capacity at 100 rpm slower speed — 1700 instead of 1800. In an 8-hour full-load operation, the Jaeger's engine does its work in 48,000 fewer revolutions.

Because it runs slower, it saves miles of engine piston travel and pounds of fuel every working day. The engine requires less maintenance . . . lives a longer operating life.

The compressor unit in a Jaeger lasts longer, too. 8000 hours without a vane replacement is not unusual. Ask any Jaeger owner; ask your Jaeger distributor — or send for new catalog JC-O.

← **LOW COST AIR FROM THIS "900", TOO.** The Jaeger "900" uses the same GM 6-110 diesel engine as other "900" rotaries, yet it produces its rated capacity at 100 rpm slower speed (1700 instead of 1800). Consequently, a Jaeger "900" produces more than 500 cf of air per pound of fuel. And it needs less maintenance, has a longer life. Other Jaeger models, from 75 to 365 cfm, are of comparable efficiency.

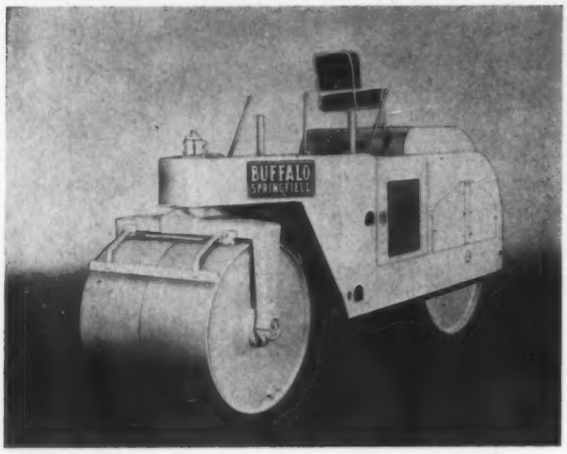
THE JAEGER MACHINE CO., 701 Dublin Ave., Columbus 16, Ohio

Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario

World-wide sales and service through Jaeger International Corporation, Apartado 137, Panama, R.P.

PUMPS • MIXERS • TRUCK MIXERS • PAVING MACHINES

For more facts, use Request Card at page 18 and circle No. 308



The new models have machined rolls made from special manganese alloy steel; high-speed, low-torque reversing clutches; rustproof sprinkler systems.

Add 8 to 12, 10 to 14-ton units to roller line

The Buffalo-Springfield Co., a division of Koehring Co., has added two new models to its line of road rollers and compaction equipment. They are the Model KT24E 8 to 12-ton and Model KT25E 10 to 14-ton Deluxe tandem rollers.

The machines are equipped with low-pressure hydraulic steering systems to minimize operator fatigue, dual controls to provide optimum visibility, and open grilles over both ends of drive rolls so that operators can see the roll edges at all times.

Adjustable bevel-gear final drives of the new rollers are protected by fully enclosed armored frames. Single-unit power-train assemblies assure precise alignment of all components. Side air intakes make access to radiators easier and reduce the danger of clogging.

For further information write to the Buffalo-Springfield Co., division of Koehring Co., Dept. C&E, 1210 Kenton St., Springfield, Ohio, or use the Request Card at page 18. Circle No. 93.

New accessory offered for tractor-roller welder

The Automatic Welding Co. has available a new accessory for its Micro-Matic double-head full-yoke welder to speed up and ease the handling of tractor rollers.

Called a Lazy Susan feeder, the accessory is a table on which rollers to be rebuilt are mounted. A hydraulic ram raises or lowers the table to the proper height for feeding the rollers to the welder. The rollers are moved off the table by mechanical means, and then are positioned and clamped onto the welder by a pneumatic air lock.

The operation is said to be quick and positive; the machine operator need only turn a valve.

For further information write to the Automatic Welding Co., Dept. C&E, Box 57, Waukesha, Wis., or use the Request Card at page 18. Circle No. 29.

Electric rammer delivers 600 blows per minute

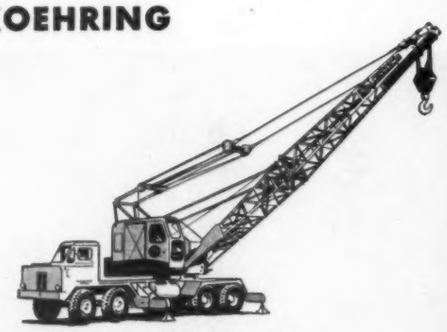
The Model EVR-120 electric rammer is announced by the Wacker Corp.

The unit operates on 3-phase 60-cycle, 220 volts. A flick of a switch instantly delivers a constant rate of 600 blows per minute—350 foot-pounds per second. The unit weighs 112 pounds. The electric motor is a squirrel-cage motor and has no brushes or commutators.

The Model EVR-120 is especially suited for compacting areas within enclosures where ignition spark or gas fumes are prohibited; also for compacting in deep trenches.

For further information write to the Wacker Corp., Dept. C&E, Hartford, Wis., or use the Request Card at page 18. Circle No. 53.

KOEHRING



Koehring Model 445 Truck Crane (45 tons) . . . available with a Twin Disc 1500 Series Single-Stage Torque Converter.

P&H (HARNISCHFEGER)

P & H (Harnischfeger) Model 655B with 1½-yard bucket, available with a Twin Disc 11,500 Series Three-Stage Torque Converter. P & H also offers 3½-yard 1055 Series with Twin Disc 13,800 Series Torque Converter.

MANITOWOC

Manitowoc Model 3600 Shovel with 3-yd. bucket . . . offered with a Twin Disc 10,000 Series or 11,500 Series Three-Stage Torque Converter. Six other Manitowoc Models are available with Twin Disc Three-Stage Torque Converters.

MARION

Marion Type 111-M Shovel with 4-yd. bucket, offered with a Twin Disc 11,500 Series Three-Stage Torque Converter. Six other Marion Models, from ¾ through 3 yds., available with Twin Disc 10,000 Series Three-Stage Torque Converters.

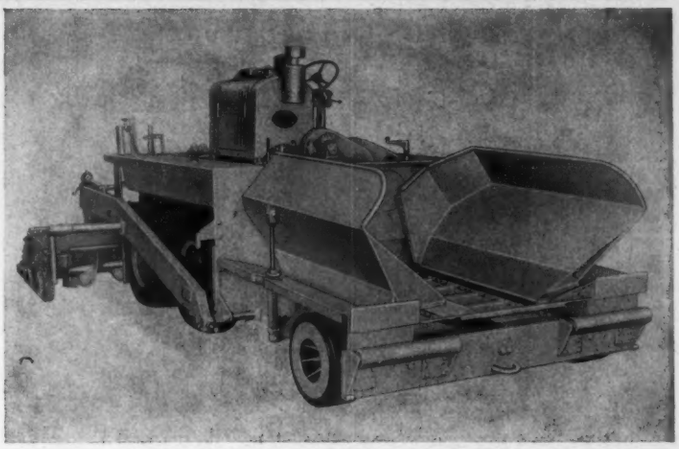
Contractors . . . specify the same that's in your crawler

All of the machines shown here have one thing in common . . . each is offered with an optional Twin Disc Torque Converter, the same make that's in your crawler tractor fleet, whether the machines are yellow, orange or red. Twin Disc Torque Converters have proved their efficiency and dependability in millions of hours of use in Allis-Chalmers, Caterpillar and International crawler tractors!

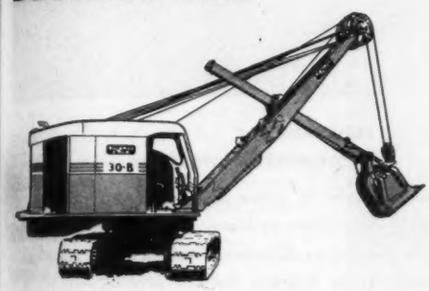
These leading excavator manufacturers offer Twin Disc Three-Stage or Single-Stage Torque Converters as either standard or optional equipment . . . for seven good, profitable reasons:

- Twin Disc Torque Converters eliminate lugging and stalling . . . permit engines to operate at maximum speed and efficiency . . . with maximum horsepower always available . . . regardless of load!
- Standardization of Torque Converters reduces maintenance problems . . . slashes spare parts inventories . . . saves time and money.
- Twin Disc Torque Converters cushion out destructive shocks and vibrations normally transmitted by direct-drives . . . for *less parts wear and replacement . . . for greater productivity year in and year out!*
- On a shovel, they deliver up to twice normal torque to the drum—an important advantage in power delivered at slow digging speeds.
- On a crane or clamshell arrangement, they permit safe, accurate control of loads and delicate inching and holding under power.
- They provide an infinite variety of torque ratios . . . automatically and instantaneously . . . according to load demands.

Fingertip-controlled folding hoppers and steering-control improvements are just a few of many new features of the Blaw-Knox Co.'s redesigned Express and Suburban bituminus paver finishers. Capacity of the Express paver hopper remains at 10 tons, the Suburban paver hopper at 4 tons. A fingertip air-control console—standard and including a directing switch for folding hopper movement—is another improvement on the Express paver. In addition, this paver includes a new baffling design for its screed heating system to produce required heat faster and to improve distribution. Features of the Suburban paver include: 8-speed transmission for speeds from 10 to 127 fpm, maneuvering at 2.3 mph, and travel at 8.6 mph. For further information write to the **Blaw-Knox Co.**, Construction Equipment Division, Dept. C&E, Mattoon, Ill., or the use Request Card at page 18. Circle No. 49.

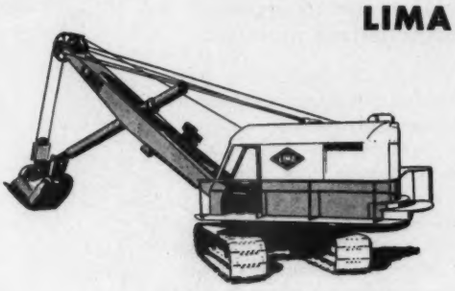


BUCYRUS-ERIE



Bucyrus-Erie Model 30-B Shovel with 1-yard bucket . . . available with a Twin Disc 10,000 Series Three-Stage Torque Converter.

LIMA



Lima Type 703 Shovel with 1¾-yd. bucket . . . available with a Twin Disc 10,000 Series Three-Stage Torque Converter, which is also offered on Lima Type 803 2½-yd. Shovel. Other Lima products offer Twin Disc Torque Converters and PTO's

LINK-BELT

Link-Belt Speeder Model 98 with 1-yd. bucket . . . available with a Twin Disc 1500 Series Single-Stage Torque Converter.

LORAIN

Lorain-85A Shovel with 2½-yd. bucket . . . offered with a Twin Disc 10,000 Series Three-Stage Torque Converter. Twin Disc also available on Lorain-26 Model ¾-yard Shovel.

converter tractor!

• They extend cable life, cut cable costs . . . by eliminating sharp impact loads . . . by providing constant line tension without dangerous snapping or jerking.

Twin Disc Torque Converters—three-stage or single-stage, from 30 to 1000 hp—are available from all leading excavator manufacturers. Specify one in your next machine. See for yourself why users throughout industry say: A Twin Disc Torque Converter is the wisest investment you can make when buying heavy-duty machinery.

TWIN DISC CLUTCH COMPANY
Racine, Wisconsin
Hydraulic Division, Rockford, Illinois

For more facts, use Request Card at page 18 and circle No. 309

New vibratory feeder is rated at 75 tph

A new heavy-duty unit has been added to the Eriez line of Hi-Vi vibratory feeders. Known as Model 75A, it is designed to handle a great diversity of materials in a wide range of particle sizes.

The 75A has a rated output of 75 tph when operating level. This can be substantially increased when the feeder is operated downslope. The unit is available as either a suspended or a base-mounted unit.

Working on the same basic push-pull principles as the smaller Hi-Vi feeders, the 75A has the Eriez electro-permanent magnetic drive system that operates directly from alternating current and needs no rectifier.

Aside from feeding materials, the 75A can also be used for spreading, drying, agitating, and separating. It will move hot materials and move materials into hot areas.

Controls of the variable autotransformer type are furnished to vary the applied line voltage, permitting quick, accurate adjustment from zero to the optimum feed rate for specific materials and uses.

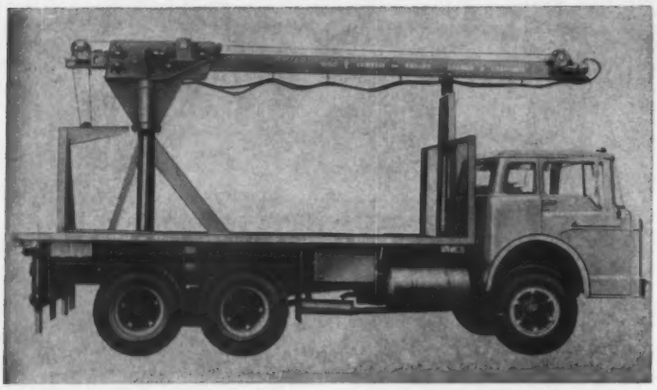
For further information write to the Eriez Mfg. Co., Dept. C&E, 1945 Grove Ave., Erie 6, Pa., or use the Request Card at page 18. Circle No. 31.

New conveyor eliminates idler roller adjustment

A new hydraulic-drive portable belt conveyor designed to handle concrete placement, and featuring idler rollers that reportedly never need adjustment, is offered by the Morgen Mfg. Co.

The unit also features hydraulic drive for positive control of continuously variable speeds to 220 fpm, bar-joist side supports, top drive for belt, 3-position rear wheels, and a self-cleaning wing-type tail pulley. It is available fully portable in 32, 40, and 48-foot lengths, and semiportable to 56 feet.

For further information write to the Morgen Mfg. Co., Dept. C&E, 1115 N. Broadway, Yankton, S. Dak. or use the Request Card at page 18. Circle No. 37.



The Hawk loader-unloader features a full hydraulic system and remote and built-in control stations for operating convenience.

Truck-mounted loader for palletized materials

A machine designed for faster, smoother, and easier loading and unloading of concrete blocks and other palletized materials is available from the South Bend Division of Curtiss-Wright Corp.

Called the Hawk, the unit fits all truck chassis from 17 feet 6 inches to 24 feet and is completely self-contained for easy mounting. It can be operated by one man.

Features include a hydraulically powered retractable boom that makes for easy load placement; a spring-loaded boom retaining rest that eliminates sway and bounce during travel; continuous full-circle boom rotation in either direction; a new unloading depth to 15 feet below grade; and a longer effective reach.

For further information write to the Curtiss-Wright Corp., South Bend Division, Dept. C&E, 701 W. Chippewa Ave., South Bend, Ind., or use the Request Card at page 18. Circle No. 62.

Make yourself HEARD ! ... without Screaming your lungs out.

Just speak in a *normal* voice . . . and let your compact, lightweight, "one-piece" Audio HAILER *do the work!* New "TP" (transistor-powered) model *projects* your words . . . *like a harpoon*—in a commanding "beam" . . . to anyone within a *half-mile* radius.

Yet Hailer is completely self-contained . . . NO external connections whatever . . . weighs only 5¾ lbs. . . . and runs on low-cost standard flashlight cells. Coupon below brings full details and price list.

AUDIO HAILER
The original power megaphone, and most widely used "one-piece" portable voice system on earth. Weatherproof finish in two-tone green or fire engine red.

AUDIO TP HAILER®
transistor-powered
PORTABLE MEGAPHONE

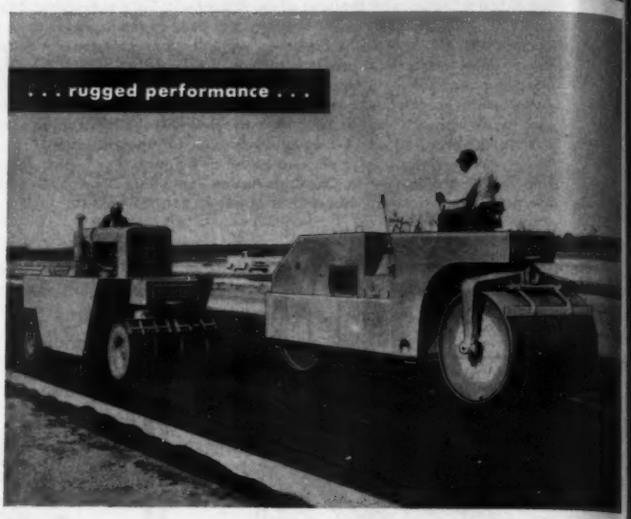
SUPER-HAILER
To penetrate through severe adverse noise levels . . . now SUPER-Hailer concentrates a 16-watt "sound beam" to pierce the surrounding roar. Mile range in quiet conditions.

AUDIO EQUIPMENT CO., INC.
Port Washington 40, N. Y.

☐ Send color brochure and price list, describing "TP" Audio Hailer.
☐ Send details of "TP" Super-Hailer.

Name.....
Company or Dept.....
St. & No.....
City..... Zone No. (if any)..... State.....

For more facts, use coupon or circle No. 310



Proven by contractors with compacting problems

Ingram Rollers continue to prove their ability to overcome modern compaction problems to the construction industry. Backed by 30 years of outstanding engineering experience, Ingram Rollers provide rugged performance with minimum maintenance. Shown above is the Ingram 12 ton 9-wheel pneumatic roller working with an Ingram 8-12 ton tandem roller.

INGRAM ROLLERS

Two-Axle Tandem Rollers 3-Wheel Rollers
9-Wheel Pneumatic Rollers
AVAILABLE IN ALL SIZES

Acme IRON WORKS
CULEBRA AVE. AT EXPRESSWAY N. W.
P.O. BOX 2020 • SAN ANTONIO 6, TEXAS

For more facts, use Request Card at page 18 and circle No. 311

AMMCO PORTABLE DREDGES

Today's Most Modern... Most Versatile... Portable Dredge!

★ ONE MAN PUSHBUTTON CONTROL!
★ ELEVATED CONTROL ROOM!
★ POWERFUL HYDRAULIC DRIVES ON CUTTERHEAD AND WINCHES
★ 80% LESS MOVING PARTS
★ 80% LESS MAINTENANCE

AVAILABLE FOR SALE or LEASE LONG OR SHORT TERM

SALES TERRITORIES AVAILABLE

AMERICAN MARINE AND MACHINERY COMPANY • P.O. BOX 1150 • NASHVILLE, TENN.

For more facts, use Request Card at page 18 and circle No. 312

A new disk plowing harrow designed for installation on Caterpillar No. 12 and No. 14 motor graders is offered by the Rome Plow Co. Spring-loaded lift links attach to the motor grader's blade and scarifier lift arms, giving the operator complete control over the harrow's position and penetration. A 16-disk model with 12-inch disk spacing is used to scarify, mix and blend, aerate, and pulverize materials in road construction, as well as in maintenance of unpaved roads. Another model with 22 disk blades spaced 6 inches apart, is designed especially for maintenance of oiled roads. For further information write to the **Rome Plow Co.**, Dept. C&E, P. O. Box 853, Cedartown, Ga., or use the Request Card at page 18. Circle No. 73.

Flexible steel form for curbs and gutters

Binghamton Metal Forms announce Quick-Strip, a new flexible steel form that simplifies placing concrete for curb-and-gutter combinations in curves.

In two easy steps, Quik-Strip can be set up and locked in place to form smooth, uniformly curved facings. After the concrete has set, the form can be stripped without hammering or wedging to force the curb forms off the division plates.

Quik-Strip is available in 10-foot lengths, with heights of 6, 7, 8, and 9 inches.

For further information write to Binghamton Metal Forms, Inc., Dept. C&E, Box 848, Church Station, New York 8, N. Y., or use the Request Card at page 18. Circle No. 58.

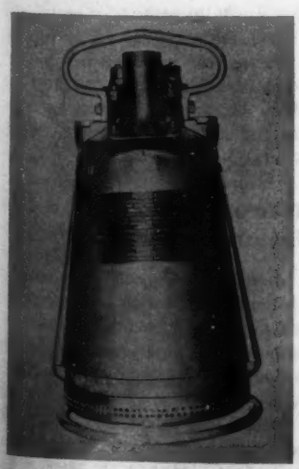
New submersible pump is 110-volt unit

A 110-volt version of its Model B-38L electric submersible pump, equipped with 1.8-hp motor, is available from the Flygt Corp.

With capacities to 85 gpm and heads to 90 feet, this model draws only 13 amp, allowing it to be operated from most house currents and portable light plants.

Flygt 1½-inch electric submersible pumps are now available in 110 and 220-volt single-phase, and 220 to 440-volt 3-phase.

For further information write to the Flygt Corp., Dept. C&E, Hoosick Falls, N. Y., or use the Request Card at page 18. Circle No. 61.



For more facts, use coupon or Request Card at page 18 and circle No. 313

Can Motorola 2-way radio cut my bills?

If you operate vehicles, you bet it can! Here's how: Drivers radio-in from their vehicles and are dispatched directly from job to job. The result: less backtracking, less "deadheading"—you get more for your money from men *and* vehicles—and you cut phone bills, gas and oil bills and maintenance bills.

But am I big enough for 2-way radio? Yes . . . even if you operate only one or two vehicles, 2-way radio saves money, mileage, time—gives you *more calls per day* —and much better service for your customers.

Can I afford it? If your drivers phone in just a few times a day, *your radio will pay for itself*. You can own or lease Motorola 2-way radio for less than $1.00 per day per vehicle. That charge covers everything—equipment, installation and maintenance.

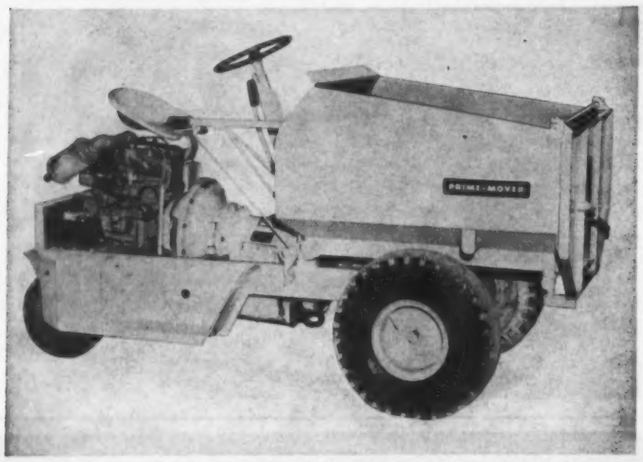
Can you prove it? We'll be *glad* to! Call in your local Motorola representative (see Yellow Pages under "Radio Communications"). He will show you the dollars and cents proof of how Motorola can build profits for *your* business. He will give you a *demonstration of a nearby system in action*. Let him show you *why* Motorola equipment is more advanced, more reliable, more economical. Ask him about service and factory responsibility for your system. You'll see why, with the most experienced buyers—police, fire, railroads, utilities, etc., *Motorola outsells all other makes combined!*

GET THE FACTS . . . MAIL THIS COUPON TODAY!

Motorola Communications & Electronics, Inc.
A Subsidiary of Motorola Inc., 4501 Augusta Blvd., Chicago 51, Ill.

☐ MAIL ME FULL FACT KIT ON 2-WAY RADIO
☐ HAVE REPRESENTATIVE TELEPHONE FOR APPOINTMENT

NAME _____ TITLE _____
COMPANY _____ No. VEHICLES ☐
ADDRESS _____ PHONE _____
CITY _____ ZONE _____ STATE _____



Clutching and shifting are eliminated on the Model 30-A, due to the Borg-Warner torque-converter drive. Power is supplied by a Wisconsin 18-hp air-cooled engine.

Concrete cart features torque-converter drive

The Prime-Mover Co. announces the Model M-30A concrete cart featuring a new Borg-Warner torque-converter drive, easy steering and braking, lower center of gravity, and convenient operator-controlled dumping action. The 3-element, single-stage torque converter eliminates clutching and shifting, and delivers quick acceleration for high production.

The M-30A is powered by a Wisconsin 18-hp air-cooled engine driving directly into the converter and transmission. Twelve-volt electric starting is standard. According to the manufacturer, operation is simple and safe, with an oil cushion protecting all moving parts and reducing maintenance costs.

Standard beds for the M-30A include an 18-cubic-foot dump body and a 42-inch-square flat-bed. The bulk-handling bed has a sliding end gate, swinging tail gate, and dumping controls to accommodate varied rates of load discharge.

For further information write to The Prime-Mover Co., Dept. C&E, Highway 22E, Muscatine, Iowa, or use the Request Card at page 18. Circle No. 39.

Large-capacity fork-lift raises materials 20 feet

A new fork-lift featuring instant reverse, large capacity, and a lift reach to 20 feet (with mast extension) is announced by Massey-Ferguson.

Designated Model 204, the rig offers four speed ranges. Maximum speed is 17.8 mph. The various available attachments are interchangeable and easily hooked up.

The Model 204 provides equal speed forward or backward without shifting. Maximum speed is 17.8 mph.

The rig has an operating pressure of 2,250 psi and will lift 5,000 pounds at 24-inch centers to 10 feet with a standard mast. With the mast extension it will lift up to 1,500 pounds at 15-inch centers to 20 feet.

For further information write to Massey-Ferguson, Dept. C&E, 1009 S. West St., Wichita, Kans., or use the Request Card at page 18. Circle No. 32.

Tractor-scraper unit features self-loading

A new, large-capacity self-loading tractor-scraper combination—featuring the Model D Tournapull and the Hancock elevating scraper—is announced by the LeTourneau-Westinghouse Co.

Built essentially for jobs where self-loading is mandatory, the Hancock Model 10E2, a 10-cubic-yard

"NEW SIZE AND STRENGTH MARKINGS ON LACLEDE REINFORCING BARS
make them easy to identify . . . save time and construction costs."
TWO LINES
75,000 min. psi ASTM (A431)
SIZE
MANUFACTURER
ONE LINE
33,000, 40,000, 50,000 psi ASTM (A15)
60,000 min. psi ASTM (A432)

Pick up any Laclede Multirib reinforcing bar. A rolled-in marking immediately tells you its size, strength and manufacturer. Laclede Multirib bars of high strength steel are rolled to conform to the two new ASTM standards: A-432 for 60,000 psi minimum yield point steel, and A-431 for 75,000 psi minimum yield. These bars can be used with assurance under the Ultimate Strength design methods included in the new A.C.I. building code. Bars of either 60,000 or 75,000 psi yield strength are identified by one and two longitudinal ribs, respectively.

These high-strength steels can contribute a saving of as much as 15% in the total construction cost of a concrete structure. The worker in the field can quickly find the right bar specified for the job; with the grade of steel well identified, many inspection and laboratory test charges may be eliminated.

For your next construction job, specify these time-saving, money-saving Laclede Multirib reinforcing bars.

4034

LACLEDE

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

For more facts, use Request Card at page 18 and circle No. 314

The soil-pulverizing action of the Hancock elevating scraper, a unit designed especially for use with the Model D Tournapull, makes spreading easy and uniform, and eliminates the need for a special tool.

unit, features a slat-type elevator that chops and pulverizes the material and carries it rapidly off the scraper blade high into the bowl, thus increasing the scraper's dirt-moving capacity. This soil-pulverizing action makes spreading easy and uniform, and eliminates the need for a separate finishing tool, states the manufacturer.

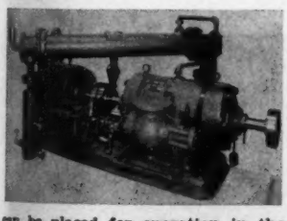
The Model D Tournapull, with its GM 4-71, 143-hp engine, is capable of haul-road speeds up to 30 mph.

For further information write to the LeTourneau-Westinghouse Co., Dept. C&E, 2301 N. E. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 66.

Two-stage compressors have compact design

A new line of preassembled 2-stage rotary compressors, specifically designed to simplify installation and foundation problems, is announced by the Fuller Co.

Featuring an overhead intercooler for maximum compactness, the unit



can be placed for operation in the field either on a floor or mezzanine. All that is necessary at the scene of installation is the addition of motor, air, and water piping.

The line includes models from C60-90H to C300-300H. These cover capacities from 279 to 3,300 cfm and discharge pressures to 125 psi. Direct connection can be made to electric motors, gas motors, or gear-turbine drive. Each stage comprises a cylinder with heads, thoroughly water-jacketed. Intake and discharge openings are located in a horizontal plane on opposite sides of the cylinder, avoiding reversal of air flow and further simplifying piping.

For further information write to the Fuller Co., Dept. C&E, 124 Bridge St., Catasauqua, Pa., or use the Request Card that is bound in at page 18. Circle No. 30.

Wire-rope slings feature ease of handling

Designated Hi-Pli, a new series of preformed cable-laid slings is available from the Wire Rope Sling Department of the American Chain & Cable Co., Inc.

These slings are said to offer the flexibility and nonkinking advantages of hemp rope, plus the strength of steel.

Coated with a galvanized Galacco finish, which provides resistance to corrosion, they are furnished dry and clean for ease of handling. The sling ends are double-locked.

Available in 12 different diameters from 9/32 inch through 2 inches, the breaking strength ranges from 3 tons for the smallest-diameter rope to 113 tons for the 2-inch-diameter sling.

For further information write to the American Chain & Cable Co., Inc., Dept. C&E, 929 Connecticut Ave., Bridgeport 2, Conn., or use the Request Card at page 18. Circle No. 35.

621

"We'll pocket MAINTENANCE COSTS for 10 years— by switching to Hercules aluminum dump trailers!"

Reports C. R. Leffler Trucking Company, Richland, Pennsylvania

"Each of our five Hercules aluminum dump trailers provides about 3000 lbs. of extra payload per trip," says Carlos R. Leffler, owner of the C. R. Leffler Trucking Company, Richland, Pennsylvania. "But that's only a part of the *total savings* we got by switching from 22-ft. steel bodies to 24-ft. aluminum dump trailers . . . for hauling coal, slag, stone, ferromanganese and sand.

"Our Hercules *aluminum* bodies are sturdier, less easily damaged, and *require no painting or other maintenance.* This holds upkeep and downtime costs to a minimum. On initial cost, we figure added payloads will take care of the difference in about 14 months. We estimate our Hercules aluminum dump trailers will be in service 10 years, or longer.

"This means, we expect at least 8½ years of profitable increased payloads, plus better appearance and all the other advantages provided by aluminum equipment."

Want to know what Hercules aluminum dump trailers can do for you? Why not check with your Hercules distributor or write Dept. A-860.

Hercules DUMP BODIES, HOISTS AND DUMP TRAILERS

HERCULES STEEL PRODUCTS COMPANY • GALION, OHIO • U.S.A.

For more facts, use Request Card at page 18 and circle No. 315

This Cedarapids Model 410 charging hopper and feeder unit is shown feeding four sizes of aggregate to the cold bucket elevator of a dryer. The Model 405 is similar in design but lacks the hopper extensions.

Charging hopper, feeder has versatile design

A new Cedarapids charging hopper and feeder unit, especially designed for use with portable or stationary asphalt plants, has been announced by the Iowa Mfg. Co.

Designated Model 405, the unit is available with or without running gear, and is said to be ideal for use where three or four sizes of aggregate are to be fed to the plant.

The Model 405 base units can be converted to a Model 410 charging hopper and feeder simply by adding 2-foot-high extensions, thus increasing the capacity of each compartment from 5 to 10 cubic yards with a 40-cubic-yard total struck capacity. Either unit may be driven by electric-motor or combustion-engine drive as desired.

The Model 405–410 can be set at any operating position within an arc of 180 degrees for easy access feeding.

For further information write to the Iowa Mfg. Co., Dept. C&E, 310 16th St. N. E., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 43.

Adds 1½ and 2½-ton units to asphalt-plant line

The Barber-Greene Co. announces the addition of 3,000 and 5,000-pound models to its asphalt batch-mixing plant line. The new units are available in both the fully automatic BatchOmatic and the company's power-control line.

BatchOmatic plants are entirely automatic and feature simultaneous weighing of all aggregate sizes and asphalt to preset proportions.

While the power-control plants rely upon the operator for initiation of the various cycles, he still has the plant fully under push-button control, with hydraulic rams—electrically actuated—taking the place of all manual operations found in conventional asphalt batch plants.

For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 48.

the pavement that stays completed...saves up to 60% on upkeep!

Already open for traffic, Interstate 83 from Baltimore, Maryland, to Harrisburg, Pennsylvania, soon will have four lanes of concrete all the way as the last miles are completed.

This is one Interstate System highway that won't be wearing detour signs! Only concrete has load-bearing strength that can be computed *mathematically* to match future traffic. Only concrete enables engineers to design highways to last 50 years and more!

There are no "moving parts" in concrete to cause hidden wear. And even under the highest temperatures concrete doesn't get soft. Traffic can't push its solid surface into ripples and washboards.

Concrete can't oxidize . . . there is never any adverse chemical reaction to sun, cold, air or moisture. So it doesn't dry out, lose strength and need expensive surface build-up treatments every few years. Then too, concrete actually grows stronger year by year.

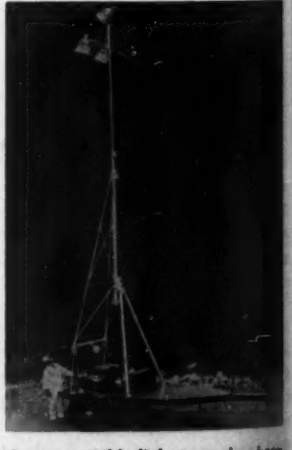
All these engineering and material advantages of concrete add up to built-in thrift. Exceptional pavement life—and upkeep costs that will run as much as 60% lower than for asphalt. That's why you can look for more and more Interstate routes going concrete all the way!

Concrete saves 69% on upkeep during first 3 years on Oklahoma Test Road. Oklahoma laid connecting two-mile sections of concrete and asphalt, the best of each type. Exact records of all pavement upkeep costs show, three year total per mile: concrete, $229.98; asphalt, $745.11. So far concrete has actually saved $515.13 per mile!

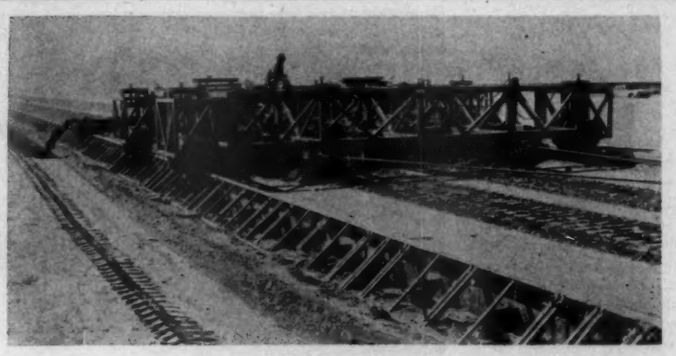
PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

For more facts, use Request Card at page 18 and circle No. 316



A new portable light tower has been introduced by the Rig-A-Lite Co. Called Trav-A-Lite, it is available either trailer or skid-mounted and is entirely self-contained—consisting of a generator, extension tower, and three or more floodlights. No guy lines are required for the 35-foot tower. While in transit, the unit is horizontal with the extension tower retracted. For further information write to the Rig-A-Lite Co., Dept. C&E, 2101 69th St., Houston 11, Texas, or use the Request Card at page 18. Circle No. 36.



A 25-foot-wide windrow sizer—an airport version of the Ko-Cal windrow sizer—is shown working at the Marine Corps Auxiliary Air Station, Yuma, Ariz. On the Yuma job the windrow sizer is being used to prepare runway base material for cement stabilization treatment by forming it into windrows of predetermined size. As the machine windrows the material, it dumps the excess off to one side so that exactly the right amount of material for mixing with the cement remains inside the forms. This unit is pulled by two crawler tractors and rides on the forms, but it is fitted with both flanged and rubber-tire wheels so that it can operate either on forms or on an adjoining concrete slab. For further information write to the **Koehring California Co.**, Dept. C&E, P. O. Box 1891, Stockton 4, Calif., or use the Request Card at page 18. Circle No. 3.

Wide buckets to suit special applications

A line of shallow-contoured buckets, especially suitable for ditch cleaning, is offered by the Hydraulic Machinery Co.

Other applications include topsoil stripping, loading ripped blacktop or other slabby materials, and backfilling.

Available in widths up to 5 feet, the buckets can be used on either the Hy-Hoe 380 backhoe or the smaller Model 250. The bucket can be reversed in 10 minutes to adapt to shovel or stockpile operations, according to the manufacturer.

Struck capacity of the 5-foot-width model is 13 cubic feet.

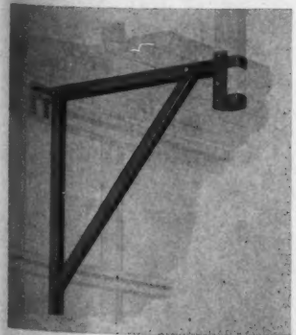
For further information write to the Hydraulic Machinery Co., Dept. C&E, 1400 National Ave., Waukesha, Wis., or use the Request Card at page 18. Circle No. 78.

New scaffold bracket is easily adjustable

Superior Concrete Accessories, Inc., offers a scaffold bracket that may be quickly adjusted for connecting to either 2 × 4 or 2 × 6 wales, or set flush with the concrete face (after the forms are stripped), by simply changing the positions of two adjusting pins.

The manufacturer points out that the "knocked-down" feature saves space in storing and shipping, and that the use of the bracket eliminates dangerous makeshift scaffolding.

For further information write to Superior Concrete Accessories, Inc., Dept. C&E, 9301 King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 15.



Designed to eliminate dangerous makeshift scaffolding, the Superior bracket is adjusted by changing the position of two pins.

AMERICANS ARE PROJECT PROVEN

Around the world, contractors and engineers prefer project proven American equipment they know will stand up under their rigid specifications. Heavy-duty Revolver Cranes (above) have helped build the biggest dams in the world—worked 24 hours a day for years with the dependability that's essential on such jobs. More than three-quarters of a century of "Big-Job" efficiency and experience are built into every American—rubber or crawler mounted cranes and excavators, locomotive and revolver cranes, derricks and hoists! American has a machine for every job . . . from excavation to erection to maintenance.

AMERICAN HOIST and Derrick Company
St. Paul 7, Minnesota

EXCAVATORS-CRANES to 4½ yds.-110 tons
LOCOMOTIVE CRANES to 130 tons
DERRICKS-HOISTS to 800 tons
REVOLVER CRANES to 400 tons
CROSBY-LAUGHLIN DIVISION
Forged fittings for wire rope-chain

For more facts, use Request Card at page 18 and circle No. 317

A sheepsfoot-type aerator-compactor with a ground pressure of 5,000 to 6,000 psi, the new Vibro-Plus Model CF-30 sheepsfoot roller can be towed by a small crawler in single, double, or triple hitch. With this unit, states the manufacturer, drying processes of material are greatly increased—vibratory action breaks up lumps, brings up water, and permits faster compaction than is possible with a conventional sheepsfoot. For further information write to **Vibro-Plus Products, Inc.**, Dept. C&E, Stanhope, N. J., or use the Request Card at page 18. Circle No. 52.

Improvements announced in concrete vibrators

Pacific Mercury announces changes and improvements in its 25,000-vibration-per-minute Solo concrete vibrators, said to simplify working mechanisms to reduce maintenance problems and insure a long, reliable service life.

A one-man-operated vibrator, the Solo has no bearings, and the entire motor-in-head unit has only four moving parts.

The new vibrators operate from standard 120-volt, 60-cycle (or less) current, or from 120-volt dc.

Six models, in two basic "stinger" diameters—1⅝ and 2 inches—are available.

For further information write to the Pacific Mercury Marketing Division, Dept. C&E, 8345 Hayvenhurst Ave., Sepulveda, Calif., or use the Request Card at page 18. Circle No. 115.

Self-standing benchers are air-operated

Atlas Copco announces a self-standing, drill-mounting, and air-operated bencher designed to fill the gap between hand-held rock drills and wagon drills.

The new unit, designated BMP 31, is recommended for use on small-scale projects or in work areas where it would be either difficult or uneconomical to move in and operate wagon drills. It can be used for shaft sinking in addition to its regular benching function, and two units can be operated simultaneously by a single worker.

Primarily designed to handle 5-foot steel changes, the unit mounts heavy-duty, high-capacity Atlas Copco rock drills such as the Lion.

Piston diameter of the bencher is 2⅝ inches. The unit, when fully extended, measures 156½ inches long; when contracted, 87⅝ inches. Air is delivered to the unit through a ½-inch hose.

For further information write to Atlas Copco, Dept. C&E, 545 Fifth Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 86.

In addition to regular benching work, the BMP 31 air-operated bencher can be used for shaft sinking.

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

More Power Per Pound . . .
More Savings Per Job

Figure it out. The new Homelite Model 8A generator weighs only 143 pounds. Yet it gives you full 3000 watts . . . with voltage automatically controlled within four per cent from no load to full load. That's more steady, dependable power per pound than any other carryable generator. And when it comes to money, you get more savings per job with this power house . . . savings in transportation, labor and maintenance. A man can quickly put it to work any place . . . close to the many electric tools and floodlights it operates. No long, power-hungry cables to dull tools or dim lights. No troublemakers. No DC brushes. No commutator. No DC windings on armature. Two types are available . . . 115 volt and 115/230 volt, both 60 cycle, AC. Write for convincing, on-your-job demonstration today.

Homelite factory branches are located throughout the country. Your nearest one is as near as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE CARRYABLE GENERATORS PUMPS • CHAIN SAWS BLOWERS

HOMELITE • A DIVISION OF TEXTRON INC., 9608 RIVERDALE AVE., PORT CHESTER, N. Y.
In Canada—Terry Machinery Co., Ltd.
For more facts, use Request Card at page 18 and circle No. 318

Slope measuring device calibrated in hundredths

An improved model of the Slope Meter Co.'s device for measuring crowns and curves is available from the manufacturer. According to the

company, the Slope Meter No. 2 is now calibrated in hundredths from .01 to .12.

Formerly this instrument was graduated to measure only in degrees. Exceptionally accurate and sensitive, it can measure a rise of one foot in 100 feet or one per cent of grade.

The instrument can be installed on motor graders or any other machine doing fine work.

For further information write to the Slope Meter Co., Dept. C&E, P. O. Box 268 C, Excelsior, Minn., or use the card at page 18. Circle No. 100.

Boom hoe attachment offers variable length

The Burg Mfg. Co. announces a new hoe attachment that allows an operator to select the best boom length, giving 13 feet of variation on a ¾-yard hoe. Maximum boom length is 23 feet; minimum is 10 feet.

The manufacturer's specifications indicate that the variable-length boom feature allows a ¾-yard machine to dig 10 feet of level floor at 20-foot depth, with a maximum digging depth of 23 feet. Other advantages claimed for the machine are that line and grade can be better maintained; footings can be dug more accurately with the same machine; trenching in restricted areas and around service lines is facilitated; dirt can be moved farther from the excavation.

Known as the "Super Hoe," the unit is said to be adaptable to any type of digging job.

For further information write to the Burg Mfg. Co., Dept. C&E, Waverly, Nebr., or use the Request Card at page 18. Circle No. 38.

The bucket is retracted to the minimum boom length of 10 feet. It can be extended to a total of 23 feet on the variable-length boom.

A scarifier bar made by the Hydraulic Tool & Equipment Co., Inc., for mounting on the Hough Payloader Model 12 penetrates to a depth of 14 inches. Its five shanks have replaceable teeth. When raised, they're 14½ inches above ground. Close coupling of the scarifier prevents them from touching the ground, no matter at what angle the loader is working. The scarifier operates through a selector valve and the same valve that operates the bucket. For further information write to the **Hydraulic Tool & Equipment Co., Inc.**, Dept. C&E, 1034 Engracia, P. O. Box 125, Torrance, Calif., or use the Request Card at page 18. Circle No. 19.

PIPE LINE COMBINATION

For Contractors on the Move!

The NAYLOR Wedgelock coupling makes a positive connection, securely anchored in standard weight grooved ends.

Contractors looking for savings in time and work will appreciate the performance of NAYLOR Spiralweld pipe and NAYLOR Wedgelock couplings on lines in construction service.

NAYLOR pipe is light in weight, so it's easier to handle and install. That goes whether you suspend it, support it, string it along the surface or bury it. And its distinctive lockseamed, spiralwelded structure gives you pipe that is extra strong and extra safe for tough service.

NAYLOR Wedgelock couplings save time and work, too, because they are designed for faster, easier and more economical connections. A hammer is the only tool required to connect or disconnect it.

Wouldn't it pay you to look into this NAYLOR combination for your air, water and ventilating lines? Write for Bulletin No. 59 to get the details.

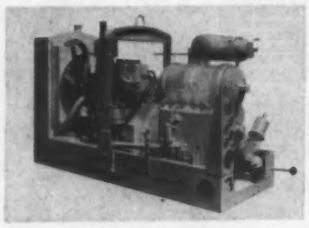
NAYLOR PIPE *Company*

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

For more facts, use Request Card at page 18 and circle No. 319

New, improved compressor for mounting on trucks



An improved 125-cfm rotary compressor for cross mounting behind cabs on motor trucks is announced by the Davey Compressor Co.

Designated Model 125-RP utility skid, the unit features convenient curbside location of all controls, gages, service outlets, and a vertical instrument panel.

The compressor unit is of Hydrovane rotary type with Davey Perma-Vane light metal blades. A thermo-bypass controls temperature and flow of compressor oil.

The clutch, connecting a Hercules Go 198A engine to the compressor, is of Twin Disc dry type. It has an extended lever for easy operation from the ground. Other accessories, such as the oil filler spout, are so arranged that the entire assembly can be serviced without climbing on the truck body.

Model 125-RP utility skid dimensions are: length, 78 inches; height 48 inches; width, 28 inches. Weight is 2,190 pounds (wet).

For further information write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 109.

MARVEL
SYNCLINAL FILTERS

FOR DEPENDABLE PROTECTION on all Hydraulic and other low pressure circulating systems

Designed to give more ACTIVE filtering area—MORE dependable protection—MORE productive operation before cleaning is necessary. *Meet J.I.C. Standards.*

A

A—Synclinal SUMP TYPE
CAPACITIES: 5—8—10—20—30—50—75 and 100 G.P.M.
PIPE SIZES: ¾"—1"—1¼"—1½"—2"—2½" and 3".
CONNECTIONS: Coupling—Male Nipple.
BY-PASS VALVE: Not available.

B—Synclinal LINE TYPE
CAPACITIES: 5—8—10—20—30—50—75 and 100 G.P.M.
PIPE SIZES: ¾"—1"—1¼"—1½"—2"—2½" and 3".
BY-PASS VALVE: Not available.
OPERATING PRESSURES: Up to 80 p.s.i.

C—Bonded LINE TYPE
CAPACITIES: 10—20—30—50 and 75 G.P.M.
PIPE SIZES: 1"—1¼"—1½"—2" and 2½".
BY-PASS VALVE: Available with or without.
OPERATING PRESSURE: Up to 250 p.s.i.
OPERATING TEMPERATURES up to 300° F.

B

D—IN-LINE FILTER
CAPACITIES: Up to 60 G.P.M.
PIPE SIZES: ¾"—1"—1½" and 1⅛" (at both inlet and outlet).
BY-PASS VALVE: Available with or without.

E—Bonded SUMP TYPE
CAPACITIES: 10—20—30—50 and 75 G.P.M.
PIPE SIZES: 1"—1¼"—1½"—2" and 2½".
CONNECTIONS: Coupling—"O" Ring—Male Nipple.
BY-PASS VALVE: Available with or without.

F—Tandem SUMP TYPE
CAPACITIES: 10—16—20—40—60—100—150 and 200 G.P.M.
PIPE SIZES: ¾"—1"—1½"—1¼"—2"—2½" and 3".
CONNECTIONS: Coupling—Male Nipple.
BY-PASS VALVE: Not available.

C

D

E

F

FILTERING MEDIA in all Marvel Filters is Monel wire cloth available in mesh sizes of 30-40-50-60-80-100-150 and 200 to meet your filtration requirement.
EASY TO CLEAN—All Marvel Filters are easy to clean. Line type units operate in any position and may be serviced without disturbing pipe connections.
OVER 900 O. E. M's. install Marvel Filters as Standard Equipment.

IMMEDIATE DELIVERY

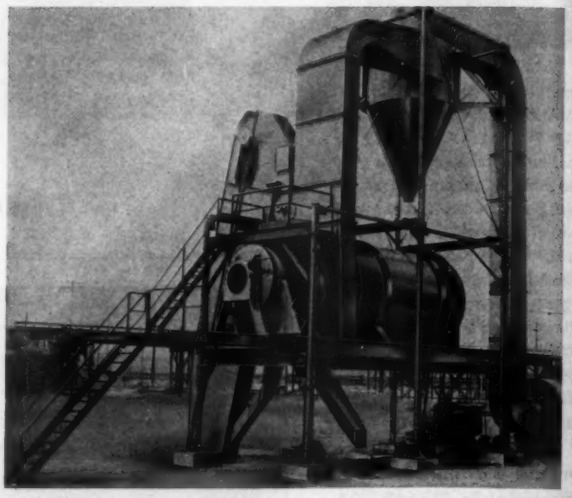
For further information on a specific type filter—Write—wire or phone

MARVEL ENGINEERING COMPANY
7227 N. Hamlin Ave., Chicago 45, Ill.
Phone: JUniper 8-6023

Please send me information on Marvel Filters as indicated: CE-8
☐ Hydraulic Oils ☐ Coolants ☐ Lubricants ☐ Fire Resistant Fluids
☐ Water ☐ Sump Type ☐ Line Type ☐ In-Line

Name_____
Company_____
Address_____
City_____ State_____

For more facts, use coupon.



Depending upon the material and the moisture content, the Simplicity double-shell dryer dries 100 to 150 tph. The manufacturer claims it operates with less power, fewer bearings, and simpler machinery.

Announce new, improved double-shell dryer

A new 9 × 16 double-shell dryer is announced by the Simplicity System Co.

The dryer has an improved type of breeching, plus easy access for maintenance, as well as a new and improved design of combustion chamber with manual, semiautomatic, or fully automatic temperature control.

The new unit is standard equipment on the Simplicity S-100 asphalt plant. It can also be used as an industrial dryer for such materials as sand, gravel, stone, and slag. According to the manufacturer, it easily dries 100 to 150 tph, depending on the material and moisture content. It has 1,018 cubic feet of volume, and is set horizontal to operate with less power, fewer bearings, and simpler machinery.

For further information write to the Simplicity System Co., Dept. C&E, Sholar Ave., Chattanooga 6, Tenn., or use the Request Card at Page 18. Circle No. 68.

Jay Tamper maintenance: "2 years - $17"

The Roy Klossner Company, San Antonio, Texas, sells Jay Tampers to such blue ribbon contractors as the Bechtel Corporation, which used 7 of them on the Reynolds Aluminum project near Gregory, Texas.

Reports Klossner: "The first 50 Jay Tampers we sold averaged $17 for replacement parts over a 2-year period. Double that to count labor, and maintenance still figures out at less than 4c per hour."

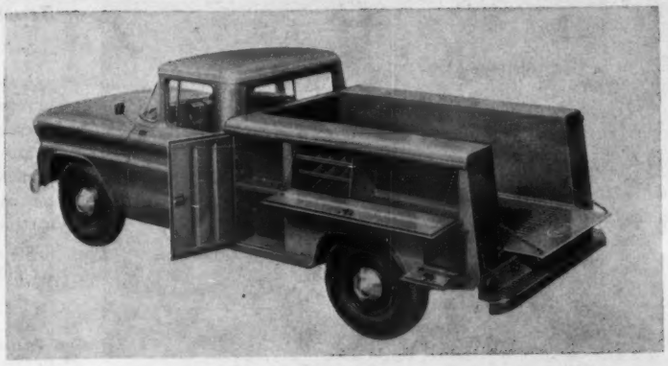
Savings on such jobs as the Port Charlotte Residential Development and the Tidewater Refinery are similar. In one case, compaction cost per cubic yard was cut from $2.68 to 12c.

Even greater savings are now available with Jay's new models, which tamp harder, faster, better on all soils and blacktop. Improvements include stepped-up power, new handles, and a new trailer for easy transport.

See your Jay dealer for a free demonstration, or send for new Catalog J-0. Jay Company, Division of J. Leukart Machine Co., Inc., 2226 South Third Street, Columbus 7, Ohio.

JAY tampers

For more facts, use Request Card at page 18 and circle No. 320



A new line of service bodies is available from the McCabe-Powers Body Co. Designated Service-Master, the bodies are available in sizes for old or new ½, ¾, 1, and 1½-ton chassis, regardless of make. The Model SM-10 body, 77 inches long at floor line, fits chassis having a 40 to 42-inch cab-to-axle dimension; the Model SM-15, 90 inches long, fits 48 to 54-inch cab-to-axle chassis. Model SM-20 (single rear wheels) and Model SM-30 (dual rear wheels) bodies are 102 inches long and fit chassis measuring 57 to 60 inches cab-to-axle. For further information write to **McCabe-Powers Body Co.**, Dept. C&E, 5900 N. Broadway, St. Louis 15, Mo., or use the Request Card at page 18. Circle No. 63.

Portable 2-ton hoist mounts in any position

A portable 2-ton hoist weighing 100 pounds is available from the Sasgen Derrick Co. for use on cranes, booms, derricks, material elevators, and other equipment. Designated Model 2-T, it mounts in any position, and with a single line is said to handle a 4,000-pound load with ease.

Construction features include steel machine-cut gears, drum, and frame.

The brake is a double-acting, external-band type, and is used for lowering ordinary loads. The spring-loaded ratchet pawl will hold a load at any point when pressure on the crank is released. The pawl may be located in a disengaged position to allow controlled lowering of loads by use of brake and crank handle.

Cable capacity ranges from 75 feet of ⅝-inch wire rope to 450 feet of ¼-inch rope.

For further information write to the Sasgen Derrick Co., Dept. C&E, Dept. CI-10, 3101 W. Grand Ave., Chicago 22, Ill., or use the Request Card at page 18. Circle No. 40.

Expand vibrator line with two new models

The Cleveland Vibrator Co. announces the addition of two new sizes to increase its Type KO line of one-piece air vibrators designed to keep materials flowing from bins, chutes, and hoppers.

States the manufacturer, one-piece construction of the Type KO eliminates unnecessary bolts, an end plate, and a mounting plate.

The line now includes 1⅝ and 5-inch-size vibrators with long-stroke, heavy-duty pistons in the larger models. All units can be equipped with automatic lubrication and air-filter units to stop impurities and moisture.

For further information write to the Cleveland Vibrator Co., Dept. C&E, 2850 Clinton Ave., Cleveland 13, Ohio, or use the Request Card at page 18. Circle No. 119.

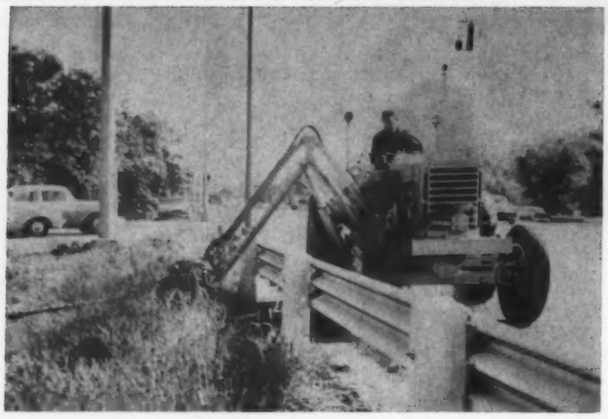
For more facts, use Request Card at page 18 and circle No. 321 ▶

A truck mixer drive guaranteed for 5 years?

Yes, the gear drive on THE NEW SMITH!

this is the Smith Gear Drive...

SMITH



The Anderson mower, mounted on an Oliver 770 tractor, reaches over highway guardrails to cut grass and weeds.

Tractor with mower cuts over guardrails

A tractor fitted with an extension mower that cuts over guardrails is offered by The Oliver Corp.

The Oliver 770—with heavy-duty Anderson cutter—permits the operator to cut behind guardrails and other obstructions, as well as to cut high-angle slopes. The mower can be set for any angle from 90 degrees above to 45 degrees below horizontal, and for any height up to 116 inches.

This 6-cylinder, 51-flywheel-horsepower gasoline or diesel-engine-powered tractor travels at speeds to 11.1 mph for quick moves to working areas. The 770 has a 6-speed transmission and may be equipped with power steering and a wide range of working attachments.

For further information write to The Oliver Corp., Dept. C&E, 400 W. Madison St., Chicago 6, Ill., or use the Request Card at page 18. Circle No. 64.

Thor

Everything you want in Power Trowels... *and more!*

This is the easy handling Thor power trowel with a 39" blade sweep, available in three or four blade design. Delivers more output per operator. Light and portable. Automatic blade tilt with finger-tip control. Rugged tubular construction. All working parts encased for extra long service. 29" model available. Check your Thor construction equipment distributor. Thor Power Tool Co., Aurora, Ill. Branches in all principal cities.

For more facts, use Request Card at page 18 and circle No. 322

Offer two new heavy-duty all-wheel-drive trucks

Two new heavy-duty International all-wheel-drive trucks have been introduced by the Motor Truck Division of the International Harvester Co.

The trucks are the Model R-210 (4×4) rated at 39,000 pounds gvw, and Model RF-210 (6×6) with 49,000-pound gvw rating. With optional front axles, gvw ratings of 42,000 and 52,000 pounds, respectively, are available.

Front drive axles on both 4 × 4 and 6 × 6 models are of a new design that features outrigger-type front spring mounting that reportedly results in maximum front-end stability and a lower chassis height.

Standard engine for both models is the International 6-cylinder RD-450 rated at 182 horsepower. A 212-hp RD-501 6-cylinder engine is available as an option. Liquefied-petroleum-gas fuel systems are optional on both engines.

For further information write to the International Harvester Co., Motor Truck Division, Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 127.

Announce new concrete densifier and retarder

Sun Chemical announces a blend of chemically active compounds in powder form to control, set, and reduce water content without increasing the air content in concrete and mortar mixes.

Called Symentard, it reduces water requirements and retards setting, so that as temperature rises and water requirements increase, the proportion of Symentard can be increased, resulting in greater water reduction to keep the water-cement ratio uniform.

This retarding densifier does not entrain air. Whether the original concrete is air-entrained or not, the proportions of Symentard may be varied without concern about the air content—and since it acts only on the cement gel, it is effective with all types of cement and aggregates.

Write to A. C. Horn Cos., division of Sun Chemical Corp., Dept. C&E, 2133 85th St., North Bergen, N. J., or use the Request Card at page 18. Circle No. 125.

. . . and for

NEARBY SERVICE on Black & Decker tools. Black & Decker maintains 50 factory service branches plus authorized service stations to give your B&D tools the attention mechanical products need periodically. Keep your B&D tools in top condition, on the job all the time.

Only factory parts and factory-approved methods are used. Fast service and reasonable cost, always.

SWIFTY SERVICE says be sure to ask about **FREE TOOL INSPECTION** no cost, no obligation.

STANDARD B&D GUARANTEE after completion of all recommended repair work.

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Black & Decker

Quality Tool Service

35-ton drop-deck trailer weighs 13,410 pounds

A 35-ton drop-deck trailer that weighs 13,410 pounds has been announced by Talbert Trailers, Inc.

Designated Model T3D-35-RGH-RA-T-1, the trailer is constructed of T-1 high-strength steel, and features Talbert's new hydraulic removable gooseneck. Powered by twin hydraulic rams, the gooseneck uses the entire bearing area of the tractor tandem to raise and lower the deck. Also featured are: removable three-axle suspension; removable third axle; Hendrickson rubber bushed tandem; and outriggers.

For further information write to Talbert Trailers, Inc., Dept. C&E, 7950 W. 47th St., Lyons, Ill., or use the Request Card at page 18. Circle No. 99.

The gooseneck on the Talbert trailer, powered by twin rams, makes use of the entire bearing area provided by the tractor tandem to raise and lower the deck.

Premixed blasting agent gives greater uniformity

A new premixed blasting agent is announced by the Du Pont Co.

Nilite 101 nitro-carbo-nitrate blasting agent, which can be used in holes as small as 2 inches in diameter, is said to be free-flowing and provide greater assurance of uniformity in blasting. Available in 50-pound bags, it is not cap sensitive, and requires a primer to detonate it.

For further information write to E. I. du Pont de Nemours & Co., Inc., Dept. C&E, Wilmington 98, Del., or use the Request Card at page 18. Circle No. 122.

Surveying instrument has several improvements

The Geodimeter Co., a division of AGA Corp., of America, announces a new addition to its line of electronic distance measuring equipment.

Called Geodimeter Model 4B, the new device offers a number of important advantages over previous models. These include:

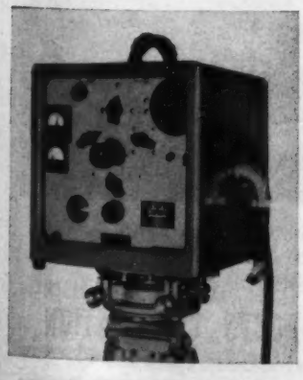
1. A reading dial numbered to every ten divisions, thereby improving readability. A new null meter and control instrument enables faster observations.

2. A course site included within the instrument, resulting in a reported reduction of at least 25 per cent in pointing time.

3. A Kerr cell heater installed in the instrument, permitting operation in a range of temperatures from minus 40 to plus 120 degrees F.

4. Longer operating range in bright sunlight—up to 5,000 feet.

For further information write to the Geodimeter Co., AGA Corp. of America, Dept. C&E, 2013 Park Ave., South Plainfield, N. J., or use the Request Card at page 18. Circle No. 123.



For more facts, use coupon or Request Card at page 18 and circle No. 323 ▶

that has the GUTS to prove its maintenance costs peanuts!

Take an Impact Wrench that's built with extra ruggedness clear through. Take a Factory Service Branch network that keeps accurate repair records. Result: *proof positive* that Black & Decker Impact Wrenches have a phenomenally low maintenance cost.

No other Impact Wrench approaches the Black & Decker because no other Impact Wrench can match the power, speed and maintenance-free construction of a Black & Decker. From drive spindle to reversing ring, every part has been designed to eliminate breakdown problems.

Wherever a bolt, nut, wood or lag screw must be spun, or drilling and tapping done—in machinery moving, installation work, general maintenance or production—a B&D Impact Wrench will do the job faster, with less fatigue, and at lower cost. Mail the coupon or call your B&D distributor for a demonstration.

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Quality Electric Tools

THE BLACK & DECKER MFG. CO., Dept. 1308
Towson 4, Md. (In Canada: Brockville, Ont.)

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☐ Please send additional information on.....

Name.....Title.....

Company.....

Address.....

City.....Zone.....State.....

☐ Drills ☐ Hammers ☐ Scrugun® ☐ Bench Grinders

Four-wheel-drive loader is biggest in line

The biggest, most powerful model in its line of 4-wheel-drive loaders has been announced by the J. I. Case Co.

Called Model W-12, this tractor shovel has a carry capacity of 9,000 pounds and a break-out capacity of 23,500 pounds. Its standard loader bucket is SAE-rated at 2½ cubic yards. Optional buckets with SAE-rated capacities of 1⅝ and 3½ cubic yards are also available.

Features include: torque-converter drive that automatically and instantaneously more than triples engine output torque to meet increasing loads; constant-mesh transmission that provides speeds from 0 to 23 mph in forward or reverse through three speed ranges; power transfer differential for all four drive wheels; power shift; power steer; power brakes; and forward-pivoted lift arms that provide complete operator safety.

The loader bucket is easily interchangeable with a specially designed dozing blade, brush rake, and V-type or angling snowplows.

For further information write to the J. I. Case Co., Dept. C&E, 700 State St., Racine, Wis., or use the card at page 18. Circle No. 118.

The Case Model W-12 features a loader bucket rated at 2½ cubic yards.

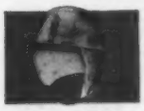
BUY THE BEST...

Fibre-Metal's Quality

WINTER LINERS

for WARMTH & COMFORT

Warmth, durability, comfort and convenience are built into Fibre-Metal's completely new *quality* line of winter liners...for greater worker safety and "work ability." Designed for all safety hats and caps in the field, these winter liners are made of high quality, water-repellent, mercerized and sanforized fabrics...expertly tailored for maximum service life. *Ask your welding and safety supply distributor* NOW for our more descriptive bulletin or just order by model number and size.



Model FLF-E (Small and large sizes). Same as FLF but features zipper attachment of ear flap and neck section. For mild to frigid climates. Chin strap with adjustable snap. Provision for MF Mouthpiece.

Model FLN-E (Small and large sizes). Has yellow Neoprene-coated outer fabric for exceptional warmth retention and resistance to all wind and weather conditions (sleet, snow, rain!). Extra long neck. NO METAL PARTS! Ideal for use with electrical safety hats and caps.

Model FLF (Small and large sizes). For cold to frigid climates. Heavy gray outer flannel, red knit lining. Long neck for extra wind protection. Chin strap with adjustable snap. *Provision for snap-on MF Mouthpiece to give additional face protection (as illustrated above).*

Model FLF-E (Small and large sizes). Same as FLN-E but with heavy gray outer flannel.

Many other models available!

For the BEST...for Maximum warmth and comfort...ORDER NOW!

The FIBRE-METAL Products Company | CHESTER PENNA

In CANADA Fibre-Metal (Canada) Limited Toronto

For more facts, use Request Card at page 18 and circle No. 324

"Snow removal jobs go three times faster with MONARCH POWER HYDRAULIC CONTROLS"

says

E. H. UECKER

Madison Square Garage, Grand Rapids, Mich.

Mr. Uecker has found what everyone finds — that Monarch Power Hydraulic Controls make snow removal jobs easier, faster, and more economical! One man controls the plow from the cab . . . instant up-and-down action with the flick of a wrist. Battery-operated or fan-belt driven units. See your dealer. Free folder upon request.

MONARCH ROAD MACHINERY COMPANY

1331 Michigan St., N.E. Grand Rapids 3, Michigan

For more facts, use Request Card at page 18 and circle No. 325

Offer crawler-type drill for blast-hole drilling

The Le Roi Trac-Newmatic, designed for fast drilling of vertical, horizontal, and angular primary and secondary blast holes, is available in two models.

The LDC-500R model, mounting a new striking-bar type of 5-inch drifter, reportedly permits drilling of 4-inch holes in as little time as normally required for 3½-inch-diameter drilling.

A similar type of 4-inch drifter used on the LDC-400R Trac-Newmatic is equally efficient in converting air pressure to drilling power, according to Le Roi. It is recommended for drilling requirements of 2½ to 3 inches. Both drills have forward, neutral, and reverse rotation for quick drilling, extracting of tight steels, and working with coupled steels.

Wide pattern drilling with the Trac-Neumatic is possible because the operator can swing the feed support arm over the crawlers from center line to 60 degrees left or 45 degrees right. Breast holes can be drilled as high as 10 feet 6 inches. Quick and easy setup for lift-hole drilling is also a feature.

A new vane-type motor, designed to meet all drilling speed and power requirements, powers the feed. Oscillating-type crawler assemblies are controlled and gear-driven by individual 7½-hp reversible, piston-type air motors. Trac-Newmatic tramming speeds range to 2 mph when pulling a Le Roi 600-cfm rotary compressor. With compressor in tow, grades of 10 per cent are easily handled, states the manufacturer.

For further information write to the Westinghouse Air Brake Co., Le Roi Division, Dept. C&E, 1706 S. 68th St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 55.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

MOBILE OFFICE Units are low in cost . . . Built to your specifications . . . There's a unit to fit your every need.

Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation.

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MOBILE OFFICES are being used by major contractors and other major businesses throughout the United States. In every case they have proven their worth.

Remember, whatever your needs may be, a MOBILE OFFICE Unit can be built to fit your requirements.

If It's Mobile . . . We Build It!

MOBILE OFFICE, INC.

Phones: DOrchester 3-1048-9

7314 Stony Island Avenue, Chicago 49, Illinois

For more facts, use Request Card at page 18 and circle No. 326

New fast acting penetrant and rust solvent . . . saves time, trouble, money and tempers. Available in pressurized cans or regular pints and gallons.

SPRAY PRODUCTS CORPORATION

P. O. Box 844 • Camden 1, New Jersey

For more facts, use Request Card at page 18 and circle No. 327

Automatic raising and lowering of the 8-foot-wide × 18-foot-long deck permits one-man loading and unloading. The new Wisconsin line includes models in 15, 18, and 20-ton capacities.

Heavy-duty tilt trailers are one-man operated

The Wisconsin Trailer Co., Inc., announces a complete new line of heavy-duty gooseneck tilt trailers.

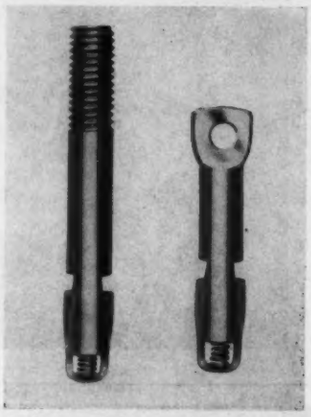
According to the manufacturer, the beaver-tail design of the Wisconsin trailer permits exceptionally low climb angle during loading or unloading, thereby reducing strain on equipment and insuring smoother, faster, safer handling of the heaviest equipment. The beaver-tail's low angle also eliminates slippage on wet deck.

Like all Wisconsin trailers, the new gooseneck models are built with extra frame depth, doubler plates at all critical welds, and are equipped with unbreakable rear channel mounting. Each model in the new line offers one-man loading and unloading with automatic raising and lowering of the 8-foot-wide × 18-foot-long deck.

Models are available in 15, 18, and 20-ton capacities, and the trailers can be modified to meet individual hauling requirements.

For further information write to the Wisconsin Trailer Co., Inc., Dept. C&E, Richfield, Wis., or use the Request Card at page 18. Circle No. 82.

Expansion bolt features ease of installation



Cram-it, a device designed to speed installation of a rod hanger or tie wire-type expansion bolt is available from Wej-it Expansion Bolt Co., Inc.

After the hole is drilled in the concrete or other nonfrangible material, a Cram-it bolt is inserted by hand to the desired depth. States the manufacturer, Cram-it slides in easily yet will never pull out. Cram-its are made in a variety of sizes.

For further information write to Wej-it Expansion Bolt Co., Inc., Dept. C&E, Kingston, N. Y., or use the Request Card at page 18. Circle No. 98.

Where heavyweights move job records prove...
FIRESTONE TIRES KEEP BIG WHEELS TURNING!

Look to Firestone to help keep big wheels turning—to keep the cycle going and the project moving smoothly toward your finish date! That's because Firestone off-the-highway tires have built-in toughness to take rugged abuse and reduce your downtime. Shock-Fortified nylon cord, for example, guards against impact damage. And Firestone Rubber-X, the longest-wearing rubber ever used in Firestone off-the-highway tires, provides a big payoff in extra service hours. Investigate Firestone's Giant Tire Service for tires and maintenance matched to every need of every project on your docket. Call your Firestone Dealer or Store. Or write: Manager, Off-The-Highway Tires, The Firestone Tire & Rubber Co., Akron, Ohio.

Super Rock Grip Wide Base* Super Rock Grip Deep Tread*

TUBELESS OR TUBED

ALWAYS SPECIFY FIRESTONE TIRES WHEN ORDERING NEW EQUIPMENT

Firestone

BETTER RUBBER FROM START TO FINISH

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SPECIAL DRILLING PROBLEMS

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Wire or phone for a quotation on your next foundation job — ANYWHERE IN THE WORLD

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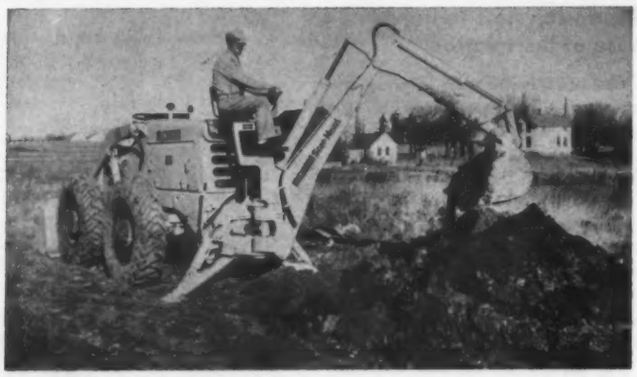
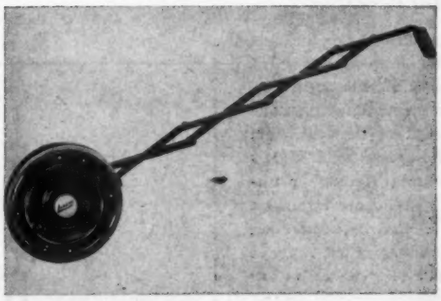


A backhoe attachment that can be snapped on or off a tractor shovel in less than a minute without tools is available from the Clark Equipment Co. Designed for the Model 55A, 75A, and 85A tractor shovels, the unit digs to a depth of 12 feet 4 inches and has a 15-foot-6-inch reach from center rotation. This new Michigan attachment will handle a variety of buckets. For further information write to the Clark Equipment Co., Construction Machinery Division, Dept. C&E, 2407 Pipestone Road, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 130.

Leading contractors use Ramset for
QUICK
DEPENDABLE
FASTENING
into concrete
or steel
INSIST ON THE
RED TIP FASTENER WITH THE TOP
Whenever plans call for fastening into concrete or steel, Ramset does the job in a split second. Ramset powder-actuated fastening has proved far more efficient and economical than old-fashioned methods. With Ramset you're assured of quick, easy fastening, even under the toughest conditions . . . and every fastener is guaranteed!
Ramset offers an amazing variety of rugged Red Tip fasteners and dependable powder charges . . . just right for every application. This wide selection of fasteners and charges means you pay only for what you need . . . you get lowest in-place fastener cost with Ramset!
Call your Ramset dealer (under "Tools" in Yellow Pages) today, or write direct to find out how Ramset can save you money.
Ramset® Fastening System
OLIN MATHIESON • WINCHESTER-WESTERN DIV. • 283-H WINCHESTER AVE. • NEW HAVEN 4, CONN.



Designed to quickly measure relatively smooth surfaces, the Model 202 measuring wheel records total distance in feet and inches. Total weight is 2¾ pounds.

New measuring wheel has built-in totalizer

The Lufkin Rule Co. announces the Model 202 measuring wheel, which measures distances from wall to wall as well as line to line, recording the total distance in feet and inches by a built-in totalizer and the recessed scale on the circumference.

An audible click marks every 2 feet, and a loud bell note, the 100-foot mark. A zero reset knob permits presetting for a desired distance. The handle extends and locks at a 34-inch height, and folds for easy and compact storage. Total weight is 2¾ pounds.

For further information write to The Lufkin Rule Co., Dept. C&E, 1710 Hess St., Saginaw, Mich., or use the Request Card that is bound in at page 18. Circle No. 76.

◀ For more facts, use Request Card at page 18 and circle No. 330

FOR MODEL
compare quality
compare price

Model "BT"-10 ton TANDEM
shown loading a roller

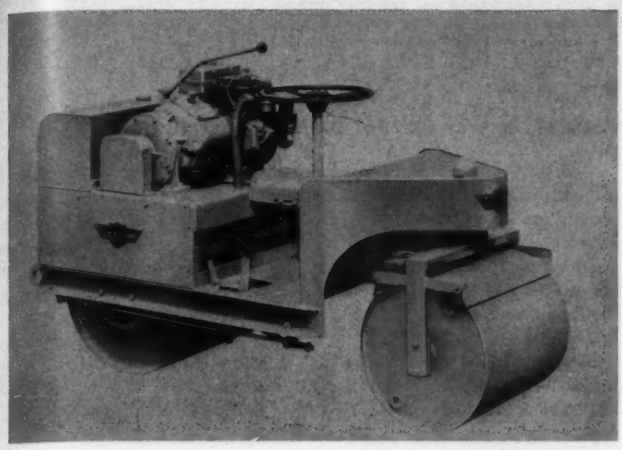
you'll find a MILLER *Tilt-Top*
...is your BEST tilt trailer buy!

Before you buy any tilt trailer, compare, model for model, with MILLER Tilt-Top features, — Precisely balanced platforms; extra deep side channels, for extra platform support right out to the edges; easy-to-hitch tongues; precision roller or ball bearings on axle and walking beam shafts; first line, tube type trailer tires and a choice of air, electric or vacuum brakes on most models. Best of all, you pay no premium for MILLER quality . . . model for model, you'll find they undersell most tilt trailers!

NEW CAPACITY RANGE 4 to 22 TONS

Miller® Tilt-Top Trailer Inc.
456-M S. 92nd Street • Milwaukee 14, Wis.

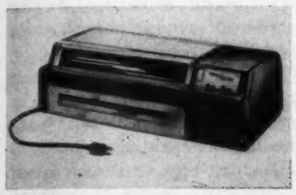
For more facts, use Request Card at page 18 and circle No. 331



This 1-ton tandem roller, the Essick Model 120, has been completely redesigned to feature a lower profile, wider rolls, complete visibility of the area ahead, and easy, positive steering. Maximum working weight of the unit is 2,070 pounds. Other features of the Model 120 include lifetime lubrication, fully exposed engine and transmission to provide for bench servicing, and a short wheelbase. Easily transported, the machine is said to be ideal for soil, asphalt, or turf compaction. For further information write to the **Essick Mfg. Co.,** Dept. C&E, 1950 Santa Fe Ave., Los Angeles 21, Calif., or use the Request Card at page 18. Circle No. 79.

New photocopier makes copy in 7 seconds

The Uni-Matic Auto-Stat photocopier is offered by the American Photocopy Equipment Co.



Photocopier features high-speed motor.

The unit features a new high-speed motor that cuts to 7 seconds the time needed to make one copy. Other features include one-step synchronized operation and push-button control.

For further information write to the American Photocopy Equipment Co., Dept. C&E, 2100 W. Dempster St., Evanston, Ill., or use the Request Card that is bound in at page 18. Circle No. 128.

ANNOUNCING

Automatic

SLOPE METER No. 2

Calibrated in hundreds .01-.12

Used almost exclusively on crown work

AIDS OPERATOR • SPEEDS WORK

"INSTRUMENTS THAT HELP YOU MAKE THE GRADE"

SLOPE METER No. 2 can be used to advantage on motor graders doing very fine or finish work. Also used on pavers.

Do you want to . . .

- Make accurate slopes in less time
- Reduce machine time required to make perfect highway crowns
- Speed up night work
- Eliminate costly hand checking
- Construct and check variable crowns while your machines are in motion
- Avoid wavy crowns—Slope Meters give a continuous check between stakes
- Help your operators do more and better work

Then order a SLOPE-METER No. 2 for each one of your Motor Graders today from your Equipment Distributor or

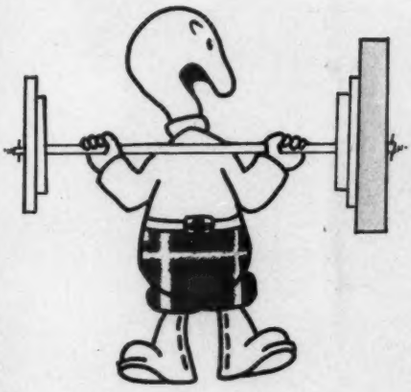
THE SLOPE METER CO.
EXCELSIOR, MINNESOTA

For more facts, circle No. 332

TAX REDUCTION

on your lifting effort...

through minimum friction loss with McKISSICK BLOCKS!



Friction levies a heavy tax on your lifting efforts. . . Reduce your overall burden by lessening the over all strain on your equipment.

McKISSICK FEATURES. . . .

PROPERLY MACHINED HARDENED GROOVES Minimize Friction Loss between sheaves and lines.

EXTRA LARGE CENTER PINS AND GENEROUS BEARINGS assure extra bearing capacity. Eliminate Friction Loss.

DIVIDER PLATES BETWEEN EACH SHEAVE knock out center pin deflaction and consequent Friction Loss.

SNATCH BLOCKS

CRANE BLOCKS

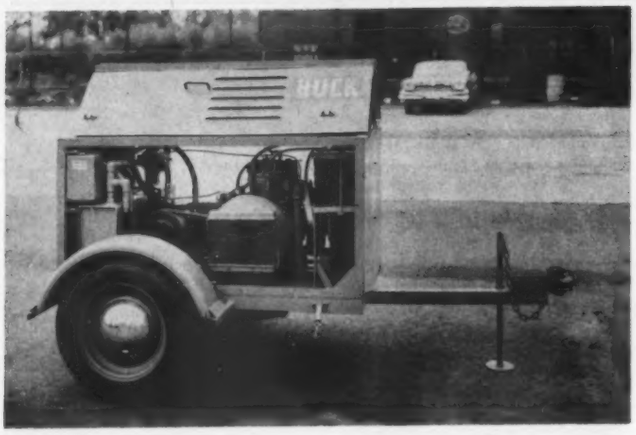
CONSTRUCTION BLOCKS

BE SPECIFIC . . . GET McKISSICK! *The best block for your purpose*

McKISSICK

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

For more facts, use Request Card at page 18 and circle No. 333



With the unit's hood folded up, complete accessibility is provided for servicing the Powerig's engine, pump, or electrical or hydraulic system.

Portable power unit for fastener installation

A portable gasoline-engine-driven, hydraulic power unit, designed especially for the operation of fastener installation tools in field applications where pneumatic or electric power is not readily available, is offered by the Huck Mfg. Co.

The Powerig Model 905G is a trailer-mounted, completely self-contained hydraulic power source, and will operate all existing Huck hydraulic installation tools. It delivers hydraulic power at operating pressures up to 5,000 psi, and can be used for installing all Huck fasteners.

Power is provided by an air-cooled 4-cycle gasoline engine rated at 9½ horsepower at a governor-controlled operating speed of 2,900 rpm.

For further information write to the Huck Mfg. Co., Dept. C&E, 2480 Bellevue Ave., Detroit 7, Mich., or use the Request Card at page 18. Circle No. 44.

Hydraulic boom featured on new crane-excavator

A new carrier-mounted crane-excavator, with hydraulically operated telescopic boom, is announced by Bucyrus-Erie. The 11-BH Series 2 transit machine is rated as a 12-ton crane. It can be equipped for clamshell or dragline service and adapted to other attachments.

Minimum boom length for compact road travel or congested indoor operation is 25 feet. A 12-foot telescoping upper section provides 25 to 37-foot short-boom flexibility or, with intermediate section manually extended and pinned in place, a 38 to 50-foot boom. An optional 10-foot section can be added to the lower boom section for extra reach up to 60 feet. Jibs are available in 10 or 20-foot lengths.

Available as optional features, and recommended for lifting crane service, are hydraulic outriggers and power-controlled lowering boom hoist. With an additional hydraulic control valve, a hydraulic ½-yard clamshell

C. A. Owens, Owner and Manager
Industrial & Marine Service Co.,
Houston, Texas

Clevite 77

Keeps natural gas flowing...NATURALLY!

C. A. Owens, one of the Southwest's leading engine rebuilders who services several of the large oil companies, is shown with one of the engines at the Vienna Field, Texas, pumping station owned by Christie, Mitchell & Mitchell. Mr. Owens has this to say:

"Any owner of a high-speed engine that is operating under continuous and heavy loads must have assurance that down-time will be cut to a minimum. An engine that is down isn't making money, whether it be in a pumping station such as this, or on any type job. You've got to use an engine bearing that can take it. We depend upon CLEVITE 77 to do the job—and it does."

CLEVITE 77 (the bearing preferred by O.E.M.) with patented cast copper lead tri-metal construction provides greater load carrying capacity and longer life.

CLEVITE ALUMINUM BEARINGS: A full line of Steel Backed and Solid Aluminum bearings (identical to original equipment) is available for ALL special earthmoving equipment. A complete range of undersizes gives you up to four regrinds, extending crankshaft life.

Complete coverage, availability and fast service from your NAPA Jobber make it easy to use the best from the world's leading original equipment manufacturer—CLEVITE.

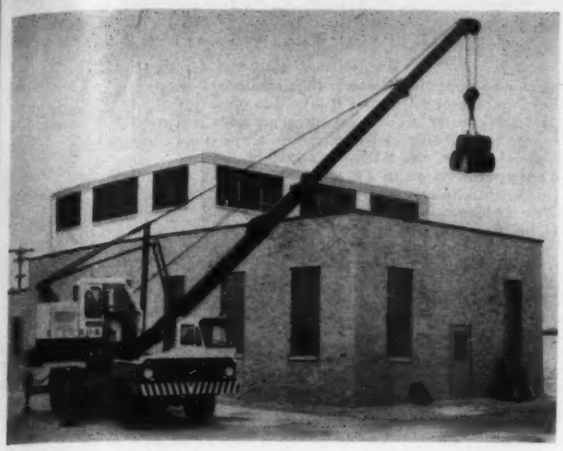
MONMOUTH *Engine Bearings*

CLEVITE SERVICE: Cleveland Graphite Bronze • Division of Clevite Corporation • Cleveland 3, Ohio

For more facts, use Request Card at page 18 and circle No. 334

LESCHEN WIRE PORTER ROPE DIVISION
H. K. PORTER COMPANY, INC.

For more facts, circle No. 335



The Bucyrus-Erie 11-BH Series machine offers exceptional reach and control benefits for precision crane work while complementing excavator flexibility.

bucket or a ¾-yard material-handling bucket can be used. A conventional 2-rope clamshell can also be used since the 11-BH has two rope drums. Equipped with a fair lead, the machine will handle the same size dragline bucket as recommended for the 11-B transit dragline.

Hydraulic power is supplied by a hydraulic pump driven directly by the engine through a flexible coupling. Hydraulic control valves are located in the upper-works cab directly ahead of 11-B main operating controls.

For further information write to the Bucyrus-Erie Co., Dept. C&E, South Milwaukee, Wis., or use the Request Card at page 18. Circle No. 60.

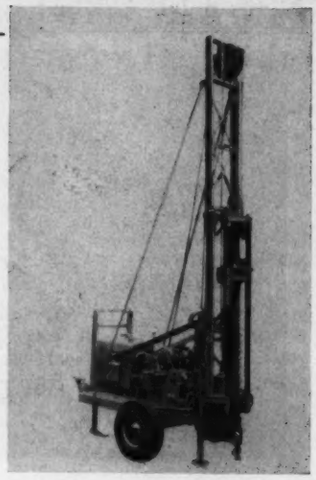
To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

Device counts, records drilling unit's blows

The addition of an automatic counter to the Model B Testborer is announced by the Penndrill Mfg. Division of the Pennsylvania Drilling Co.

The Model B drilling unit is designed specifically to auger, automatically drive samplers and casing, and core-drill. With the incorporation of the automatic counting device, it is possible to record the actual blows of the automatic driver.

For more data write to the Pennsylvania Drilling Co., Penndrill Mfg. Division, Dept. C&E, 1201 Chartiers Ave., Pittsburgh 20, Pa., or use the card at page 18. Circle No. 90.



The new automatic counter.

DIESEL ENGINE GENERATOR SETS

Immediate Delivery from Inventory!

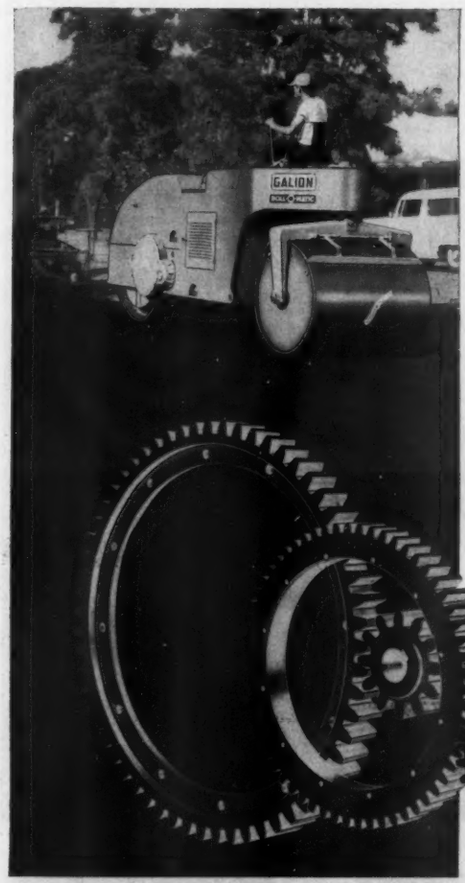
Any voltage; 50 or 60 cycle. Available in stationary, mobile or portable model. Following listing is only partial.

2000 kva Fairbanks-Morse model 33F16 (photo above)
1420 kva Fairbanks-Morse model 38D-8⅛
1375 kva General Motors model 278A
1250 kva General Motors model 567
938 kva General Motors model 567
625 kva General Motors model 278A
625 kva American Locomotive Co. model 539
412 kva Worthington model CC
375 kva General Motors model 268A
312 kva General Motors model 268A
250 kva General Motors model 268A

A. G. SCHOONMAKER Company, Inc.

Foot of Spring St. Sausalito, Calif.
EDgewater 2-1490
50 Church St., N. Y. 7, N. Y. Digby 9-4351

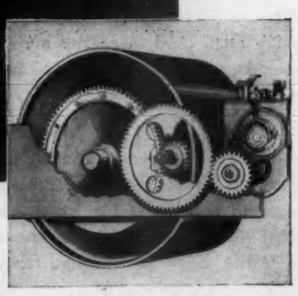
For more facts, circle No. 336



IF YOU KNOW GEARS

– you know that gradual reduction and low speeds (each gear with roller bearings) plus a straight-line spur gear train, develop the *least* friction and consequently cause the *least* gear wear. That is why Final Drive gears on Galion Tandem Rollers last the longest without adjustment or replacement.

REMEMBER!
ROLLER RELIABILITY–
depends largely on its
FINAL DRIVE mechanism



- **GALION FINAL DRIVE GEARS are all *Spur Gears.***
- **GALION FINAL DRIVE is a *two step* gear reduction train thru four spur gears — a *straight line* drive.**
- **GALION FINAL DRIVE greatest gear ratio is only *5 to 1.***
- **GALION FINAL DRIVE spur gears are special alloy steel, accurately *machine cut* and heat-treated. No ordinary, uncut, cast gears are used.**
- **GALION FINAL DRIVE has *no small beveled pinion gear* driving a *large bevel ring gear* on the roll.**

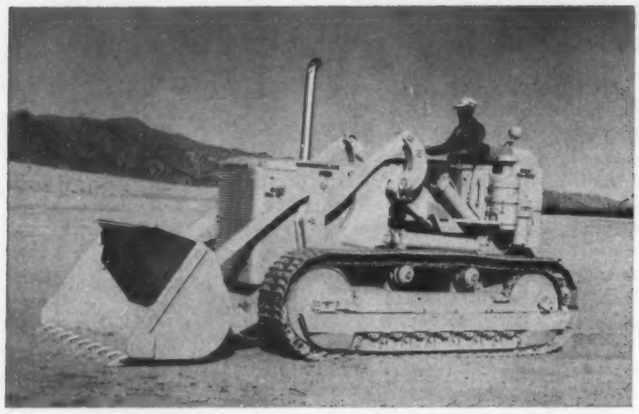
Think of these advantages of the Galion Spur Gear Final Drive before you buy a tandem roller.

SPUR GEAR GALION FINAL DRIVE

TANDEM ROLLERS
THE GALION IRON WORKS & MFG. COMPANY

General and Export Offices — Galion, Ohio, U. S. A. Cable address: GALIONIRON, Galion, Ohio

For more facts, use Request Card at page 18 and circle No. 337



A track-type excavator equipped with power-shift transmission, the Caterpillar Traxcavator 977 Series H is said to offer as much as 25 per cent greater productivity than previous models under average job conditions. The machine is powered by a 150-hp diesel engine, and a 2½-cubic-yard bucket is standard. Forward speeds range to 4.6 mph; reverse, to 5.7 mph. A full line of attachments is available. For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 129.

WIX Filter Cartridges are engineered specifically for every engine in construction service . . . gasoline or Diesel—mobile or stationary — for lube, fuel and air. Replacement Cartridges are available for:

CATERPILLAR • DETROIT DIESEL
INTERNATIONAL • CUMMINS
MURPHY • ALLIS CHALMERS
and all other
Construction Equipment

FREE Filter Survey by WIX Factory-Trained Specialist, plus a Fleet Maintenance Manual.

Even under the worst working conditions and toughest time schedules your rigs run better with WIX. ALL your engines get ALL the advantages of Prescription Filtration with WIX Oil and Air Filters on the job. WIX Filtration effectively disposes of contaminating Dirt, Dust, Abrasives and Sludge — cuts down maintenance costs, steps up efficiency and helps you get the profit you figured on.

And — WIX will make a complete Filter Survey for you FREE . . . check the correct lube, fuel and air filter cartridge replacement for every one of your engines . . . set up your service schedule and sound inventory. No burdensome stock — no delays, because your local WIX wholesaler is your convenient source for fast filter service. Write today and arrange for your FREE Filter Survey.

wix® FILTERS

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WIX CORPORATION • GASTONIA, N. C.
In Canada: Wix Corporation Ltd., Toronto
In New Zealand: Wix Corporation New Zealand Ltd., Auckland

For more facts, use Request Card at page 18 and circle No. 338

Portable sandblaster has 30-pound capacity

A portable sandblasting unit known as the Handi-Blast is available from the Hamill Mfg. Co., Inc.

The over-all height of the unit is 23 inches; tank diameter is 7 inches. The unit weighs 23 pounds empty and has an abrasive capacity of 30 pounds of sand.

One of the many design features is that blasting air does not travel through the abrasive tank, thus preventing entrapment of air-line moisture. For satisfactory operation, a 5-hp compressor is required for air supply.

The Handi-Blast operates with abrasives between 20 and 100-pound mesh.

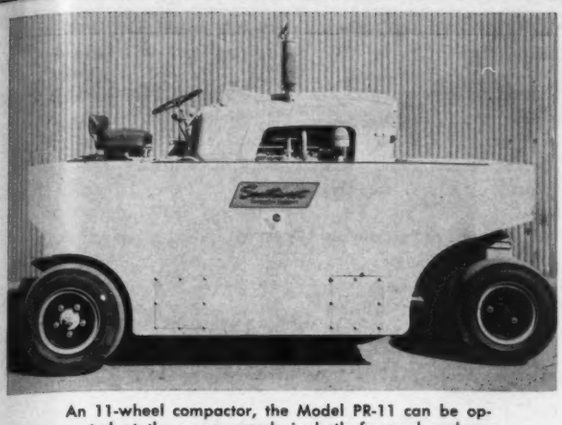
For further information write to the Hamill Mfg. Co., Inc., Handi-Blast Division, Dept. C&E, Washington, Mich., or use the Request Card at page 18. Circle No. 124.

Self-propelled roller features 18-ton capacity

An 11-wheel self-propelled compaction roller is offered by Yuba-Southwest.

The unit, Model PR-11, has an 18-ton maximum ballasted capacity and is equipped with 90-psi tires, 7.50 × 15, which allows it to meet most highway specifications. Ballast boxes are designed to hold either water or solid ballast.

The PR-11 can be operated in both forward and reverse at the same speeds with equal ease for shuttle



An 11-wheel compactor, the Model PR-11 can be operated at the same speeds in both forward and reverse with equal ease.

work in pavement rolling.

For further information write to the Southwest Welding & Mfg. Division, Yuba Consolidated Industries, Inc., Dept. C&E, 3201 W. Mission Road, Alhambra, Calif., or use the Request Card that is bound in at page 18. Circle No. 14.

New 1-ton hand hoist works in close quarters

A new 1-ton safety hand hoist, said to operate in exceptionally close quarters, is announced by the Ratcliff Hoist Co.

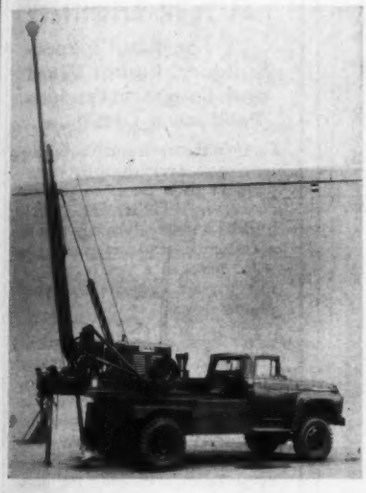
The manufacturer claims this hoist will not free-chain under load, even if the control lever is tripped accidentally, nor will it free an interrupted load.

The handle is 14 inches long, and it operates in 12 different positions; 60-pound pull raises full load; 5/16-inch raise or lower per stroke permits precise spotting of load. Headroom requirement is only 10⅜ inches.

The housing design enables the operator to rig the hoist flush with wall, pole, or other working surface. A single lever controls up, down, or free-chaining.

The hoist weighs 13½ pounds and reportedly can be completely disassembled and put back together in five minutes or less.

For further information write to the Ratcliff Hoist Co., Dept. C&E, P. O. Box 543, Belmont, Calif., or use the Request Card at page 18. Circle No. 9.



This new digger, the Sterling Model B 7, is equipped with hydraulic telescopic pole setter. It incorporates a new hydraulic turntable with the turntable ring recessed into the body. This Sterling Digger is equipped with extra-heavy-duty housings, and oversized left and leveling ram. For further information write to the **Sterling Engineering & Mfg. Co.,** Dept. C&E, Wilkes-Barre, Pa., or use the Request Card at page 18. Circle No. 113.

ONE UNIT

gives you low cost welding and AC power your own men can use. Why pay others and wait until they can do the job?

WELDS anywhere!

Repair equipment right on the job. Save expensive replacement parts, teardowns and costly delays. Speed construction projects.

plus 110 volt AC POWER

Run tools, lights, motors independent of regular power sources. No electrical connections to make.

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TROY, OHIO, Phone FE 2-1223
Manufacturers of the world's most complete line of arc welding equipment.

*Gas or Diesel engine models

HOBART
welder-power combination
You can't afford to be without it!

New CATALOG
shows many types and sizes to choose from. Ask for free copy.

HOBART BROS. CO., BOX 880, TROY, OHIO
☐ I'd like to know more about a _____ type welder.
Name _____
Address _____
City _____ Zone _____ State _____
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For more facts, use coupon or Request Card at page 18 and circle No. 339

full Power Pluses

...make hole digging and pole setting easier
—dig holes 9"-42" wide, to a depth of 20 feet

1 Power Positioning

. . . for any angle up to 90°. An easy turn of the power-leveling mechanism puts your rack bar and derrick in the exact position desired. Perfect for work in rough, uneven terrain! Full power maneuvering fore and aft—left and right.

2 Adjustable Clutch and Integrated Winch and Derrick

The clutch case has side ports which afford easy "on-the-job" adjustment of clutch and brake. Power-operated integral winch and derrick allow easy pole-setting and lifting operations—up to 4,500 pounds.

3 Telescoping Derrick

Highway's heavy-duty telescoping derrick, sturdily constructed of seamless steel tubing, has a 4,500-pound capacity. It can be extended to 29'-8" hydraulically (with full load) and will handle poles up to 75' in length. Mounts and operates integrally with boring machine.

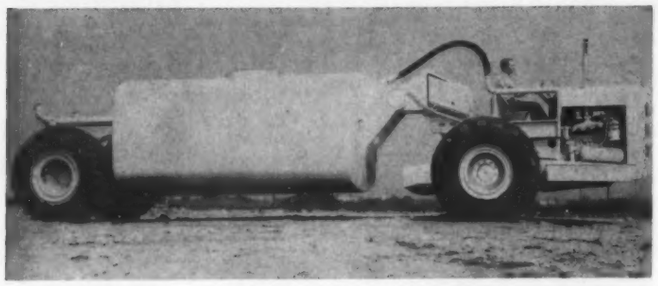
COST-CUTTING EQUIPMENT FOR A COST-CONSCIOUS INDUSTRY THROUGH **FULL POWER!**

UTILITY DIVISION
HIGHWAY TRAILER COMPANY
HEADQUARTERS: STOUGHTON, WISCONSIN

Manufacturers of Public Utility Bodies • Earth-Boring Machines • Pole and Cable Reel Trailers • Winches • Power Take-Offs • Service Accessories • Commercial Trailers • Dry-Bulk Haulers • Cargo Containers — Land, Sea and Air

SALES AND SERVICE IN PRINCIPAL CITIES

For more facts, use Request Card at page 18 and circle No. 340



The high-capacity Klein tankers are especially suited for rapid application of water for compacting of roads.

Water-truck valve system is air-controlled

An air-controlled valve system for use on its line of pull tankers and water trucks is announced by the Klein Welding Service, Inc. The valves have fingertip control from the operator's seat.

The new tanks come equipped with special valves and 1,000-gpm pumps on the standard model; other sizes are optional. Three-inch spray heads provide an even dispersement of water over a wide area.

Pull-tanker capacities range in size from 4,000 to 8,000 gallons, and the tanker trucks carry from 1,000 to 4,000 gallons.

For further information write to Klein Welding Service, Inc., Dept. C&E, 14618 E. Arrow Highway, Baldwin Park 13, Calif., or use the Request Card at page 18. Circle No. 75.

Bituminous finisher offers many features

The Model A.D. 50 asphalt finish[er] is available from the Adv[ance] Construction Equipment Mfg. Co[rp.]

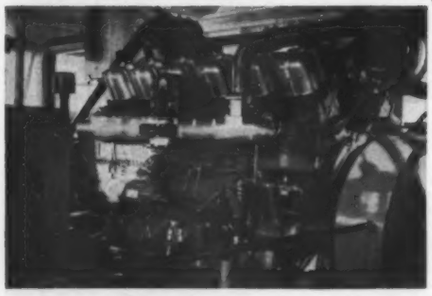
Features include front and [rear] wheel steering, automatic mat[erial] conveyors, self-cleaning folding [wings] on the receiving hopper, and a swing[ing] operator's platform that allows all-around view and instant position change while the finisher is stopped or in motion. A V-shaped floating-type screed also is standard.

Paving speeds range from 1[0] to 102 fpm. Travel speeds, forward, range from 2.6 to 9.5 mph; in reverse, from .7 to 4.6 mph.

The standard machine can pave a

Marine Pipeliner No. 114 at work for contractor-owners Marine Pipeline & Dredging Co., Ltd., of Vancouver, B. C. This 16" suction dredge is 30' x 70' (without cutters and spuds), 5' deep, 2½' draft. Northern Engine & Eqpt. Co., Ltd., Vancouver, supplied its Waukesha Diesel.

WAUKESHA *powered*



Power plant of dredge is a WAUKESHA Model VLRDBS Turbocharged DIESEL—12-cylinder, 60° vee, four cycle, 8½ x 8½-in. bore and stroke, 5788 cu. in. displacement. An independent cooling system replaces fan. About 1100 hp is applied on actual drive. Estimated capacity of V-belt driven pump is 456 cu. yds. per hour.

Working on a water-crossing of a gas pipe line in the Fraser River, British Columbia, as shown here . . . dredging on excavation for bridge piers . . . pipeline pumping of sand directly on road grade . . . or stock-piling river-sand—the Waukesha-Diesel-powered 16-inch suction dredge *Marine Pipeliner No. 114* has the capacity, speed and flexibility to handle the job. And it's portable, too—built on six pontoons, quickly disassembled for shipping on flat cars anywhere there's a job for the Marine Pipeline & Dredging Co., Ltd. They have three other portable dredges—all of them Waukesha-Engine-powered. Contractors appreciate the simplicity, dependability, and fuel and maintenance economy of the big, powerful Waukesha V-12 Turbocharged Diesel. *Send for Bulletin 1663.*

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES

Factories — Waukesha, Wisconsin, and Clinton, Iowa 481

For more facts, use Request Card at page 18 and circle No. 341

New electronic device simplifies surveying

An electronic tool designed to provide surveyors with instantaneous information as it measures distances from 250 feet to 50 miles is announced by the Cubic Corp.

The device, called Electrotape, is said to be exceptionally easy to operate and reportedly solves highway, pipeline, utility-line right-of-way charting and other surveying problems in minutes.

The Electrotape system reportedly allows surveying crews to measure distances from 250 feet to 50 miles, in minutes, with accuracy of plus or minus 1 inch. Built-in 2-way radio telephones permit the operators to converse over long distances.

Based on continuous radar principles, the unit includes an attached parabolic reflector, and an operational setup consists of two or more identical portable, tripod-mounted stations.

Operating through a regulated power supply, from a standard automotive 12-volt battery, the rugged watertight equipment can be used in any weather. Automatic temperature control permits operation from minus 40 to plus 125 degrees F.

For further information write to the Cubic Corp., Dept. C&E, 5575 Kearny Villa Road, San Diego 11, Calif., or use the Request Card at page 18. Circle No. 120.

COMMENT *from the* **BUTLER ENGINEER**

. . . For ADULT Road-builders, Ready Mixed and Concrete Products Producers ONLY . . .

Confidence is a prime buying motive in everything from suspenders to a plant to produce concrete. Whether it's a road-builder's set-up, a ready mix or a concrete products plant, you want assurance you're not going to get caught with your plants down.

• • •

After 3 years of research, cussin' and discussion, the 7 major concrete plant manufacturers, working as cooperatively as upper and lower teeth with the National Ready Mixed Concrete Association, have developed strict standards for bins, batchers, cement silos, conveyors — nearly every component for a concrete plant. Important are definitions of manual, semi-automatic and fully automatic single batchers; of manual, semi-automatic and fully automatic batching *systems* which incorporate cement, water and aggregate batchers.

This group is known as the Concrete Plant Manufacturers Bureau. It's part of the N.R.M.C.A. So, the Standards are as authoritative as St. Peter's thumbs-up or thumbs-down. The Bureau has developed Rating Plates for equipment made by its members. Here's an example:

This gives you a firm, positive basis for confidence in the equipment.

Now — add Butler Trademark . . .

. . . and you have Reliability as firm as Mr. Gibraltar's Rock.

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

For more facts, circle No. 342

The Advanced Model A.D. 50 bituminous finisher paves a 12-foot width, at speeds from 15 to 102 fpm. Travel speeds range up to 9.5 mph.

width of 12 feet. Extensions can be furnished.

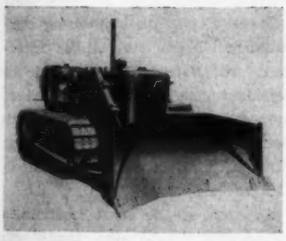
The Model A.D. 50 weighs approximately 20,000 pounds, is 18 feet long, and—with screed attached—8 feet 4 inches wide.

For further information write to the Advanced Construction Equipment Mfg. Corp., Dept. C&E, P. O. Box 337, Elyria, Ohio, or use the Request Card that is bound in at page 18. Circle No. 117.

Two U-shaped blades for new tractor model

Two sizes of Balderson U-blades—9-foot 6-inch and 12-foot—are now available for the new Caterpillar D6B tractor.

Balderson U-blades are inter-



Interchangeable with Cat straight blades or dozers in the field, the new Balderson U-blades are designed for a wide range of heavy-duty work.

changeable with Cat straight blades on dozers in the field. On new installations the Balderson U-blade uses Cat push arms and braces.

The U-shaped design of the Balderson blade is said to give greater capacity than straight or angling blades.

For further information write to Balderson, Inc., Dept. C&E, Wamego, Kans., or use the Request Card at page 18. Circle No. 116.

Symons advances two

■ Symons Clamp & Mfg. Co., Chicago, Ill., has promoted two men to the post of regional sales manager. John Imonetti is covering the northeast and Ken Boelter the southeast. Both previously held the post of assistant to the sales manager for the concrete form and equipment company.

Heil assigns five to sales positions

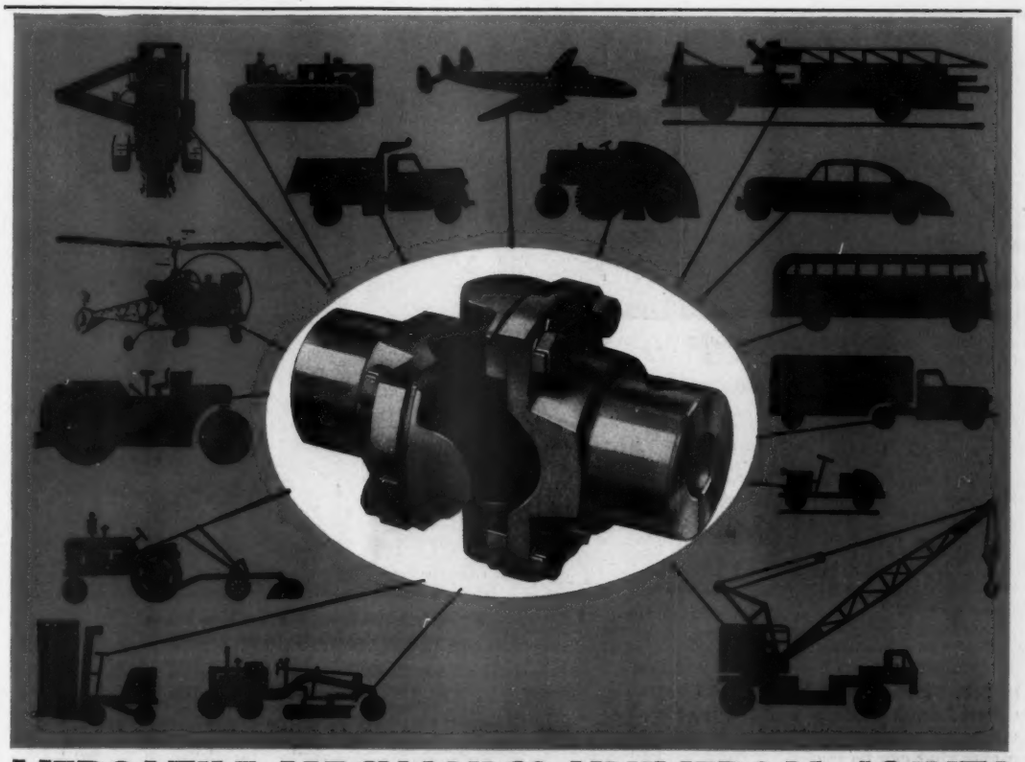
■ The Heil Co., Milwaukee, Wis., has reassigned four members of its sales organization and added one. In Kansas City, Mo., Frederick A. Brubaker has been made district manager, serving a 4-state area.

Joseph T. Schaab has been named district manager of the Seattle sales office, serving Alaska, Washington, Oregon, Idaho, and a portion of Montana.

The TEC Division, which makes a line of trailer dump units in Cleveland, has appointed Joseph A. Waite as assistant sales manager. Prior to this, he had been a district sales representative at Heil's Atlanta office.

Howard Degen has been transferred to the Tank Sales Division, to specialize in the sales promotion and marketing of the Flo-Lift dry-bulk hauler.

John F. Hazelton has joined the firm's Body and Hoist Division as sales representative in Atlanta. He is handling accounts in the Carolinas, Georgia, Alabama, Florida, and Tennessee.



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Are Used In All Of These Products
——And MANY MORE——

VERSATILE MECHANICS Roller Bearing UNIVERSAL JOINTS have been used in almost every type moving vehicle everywhere—on the land—in the air—and in the water. They excel in their use for both main drives and controls—have transmission flanges for any type of brake drum—are easy to service—gives less down time—have long slip—can run at greater angularity—and are of precision high quality. Let our engineers show you how the VERSATILITY of MECHANICS Roller Bearing UNIVERSAL JOINTS will give your products more competitive advantages.

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For more facts, use Request Card at page 18 and circle No. 343

Site preparation smooths way for aqueduct tunnel

Contractors & Engineers staff article

Preliminary work was a project in itself for the contractors on an 8½-mile-long aqueduct for Boston, Mass. While a temporary tower, left, is used in sinking a 260-foot-deep shaft that will be used to start tunnel headings in opposite directions, steel is erected for the permanent head-frame tower used in work on the tunnel headings. A hoist on the temporary tower brings shaft excavation to a hopper that loads "Euc" end-dumps hauling to the spoil area.

Setting-up operations, for construction of a $16 million, 8½-mile-long aqueduct, required almost as much planning as the actual construction procedures to be used.

The new Boston, Mass., aqueduct, running from the existing Wachusett Reservoir, is being built by the joint-venture firms of Perini Corp., Framingham, Mass.; Walsh Construction Co., New York, N. Y.; and the Morrison-Knudsen Co., Inc., Boise, Idaho.

Shafts sunk

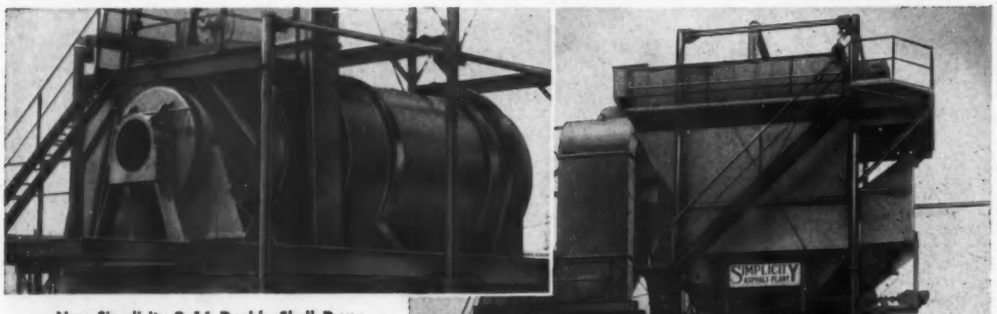
Three vertical shafts, A, B, and C, were sunk: A is at Clinton, near the reservoir; B is at South Berlin, at the mid-point; and C is at Marlboro, where it will tie into the existing feeder supplying Boston. Shaft B is almost equidistant from shafts A and C, and it is at this location that the two tunnel headings are being driven towards A and C.

Perini Corp., the sponsoring company, first began work on the permanent installation that allowed the aqueduct headings to be driven as soon as shaft B was sunk at South Berlin. Shaft A is 385 feet deep; shaft B, 260 feet deep; and shaft C, 220 feet deep.

At each of the shaft locations, a temporary head-frame tower was erected. Each consists of a hoist-operated bucket skip and an air grapple that loaded blasted rock into the buckets as the shaft was sunk. The hoist raised the skip bucket, which tripped and dumped the rock into a hopper feeding a chute. When the hopper was released, the rock dumped into Euclid rear-dumps that hauled to spoil areas around each shaft location.

Atlas Copco 1⅝ drills on jackhammers were used to sink the blast holes for the shaft. Detachable drill bits are used on the jumbos that drive the tunnel headings. The shafts, having diameters of about 17 feet through the rock, were lined with concrete as they were sunk. The inside diameter of the concrete-lined shafts is 14 feet, the same as the completed aqueduct. The aqueduct, however, will be lined only after the tunnel is completely driven.

While the contractor was in the process of sinking the aqueduct shafts, the permanent-type facilities



New Simplicity 9x16 Double Shell Dryer

NEW
Simplicity S-100

Simplicity S-100 Tower has long been known as the most dependable in the industry.

The **NEW** S-100 Plant brings you the newest developments based on 35 years devoted exclusively to building and operating the most **DEPENDABLE** asphalt plants that can be made.

The **NEW** Simplicity 9 x 16 Double Shell Dryer has improved breeching plus easy access for maintenance and a new and improved design of combustion chamber with manual, semi-automatic or fully automatic temperature control. Outstanding fuel economy, dependability and durability are built into this new dryer just as it has been built into every Simplicity dryer for the past 35 years.

OVERSIZE 5' x 14', 2½ deck screen with 180 square feet of screening area. **6000 POUND MIXER** (65.6 cu. ft. below shafts) with manual, semi-automatic or fully automatic weighing, batching and mixing. Renewable manganese steel liner sections—area of primary wear can be quickly and economically relined.

No price increase for more than a year. Note that Simplicity prices are published and are the same to everyone with no commissions and **NO PADDING** for glamorous looking but phony trade-in allowances.

There is a Simplicity of the right size for your requirement. *Get the facts before you buy any asphalt plant.*

There's a Simplicity Plant near you. We'll be glad to send you the name and location of a nearby installation.

Model	S-80	S-100	S-200
Rated Capacity (T.P.H.)	75 to 100	100 to 150	150 to 200
Dryer Volume (Cubic Ft.)	603	1,018	1,571
Dryer Speed (R.P.M.)	12	11	9
Air Volume (C.F.M.)	30,000	35,000	40,000
Fan Speed (R.P.M.)	900	800	800
Screen Area (Sq. Ft.)	96	180	180
Screen Speed (R.P.M.)	800	800	800
Bin Capacity (Tons)	50	50	85
Weighing Capacity (Lbs.)	6,000	7,500	10,000
Mixer Capacity (Lbs.)	5,000	6,000	8,000
Mixer Volume**	50.63	65.6	93.1
Mixer Speed (R.P.M.)	56	50	45
Total Weight	187,385	228,865	262,535
Total Price*	$94,500.00	$116,400.00	$132,800.00
Price Per Pound	.504	.508	.505

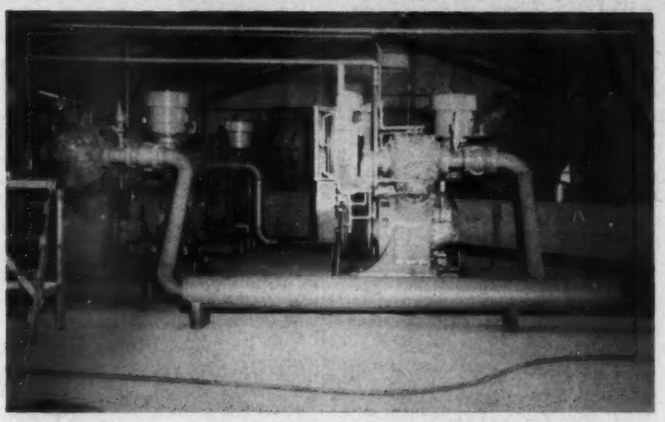
* Prices subject to change without notice. ** Cu. Ft. Below Shafts.
(NO PRICE INCREASE FOR MORE THAN A YEAR)

DEPENDABLE

THE SIMPLICITY SYSTEM CO.
CHATTANOOGA 9, TENNESSEE
THE SIMPLICITY SYSTEM FROM BUILDER TO BUYER BETWEEN MEN WHO KNOW

For more facts, use Request Card at page 18 and circle No. 344

An Eimco air-operated mucker, used to widen the base of the shaft for the start of tunnel headings, is removed from the excavation. The shaft is covered by a movable door except when men or equipment are entering or leaving the shaft.

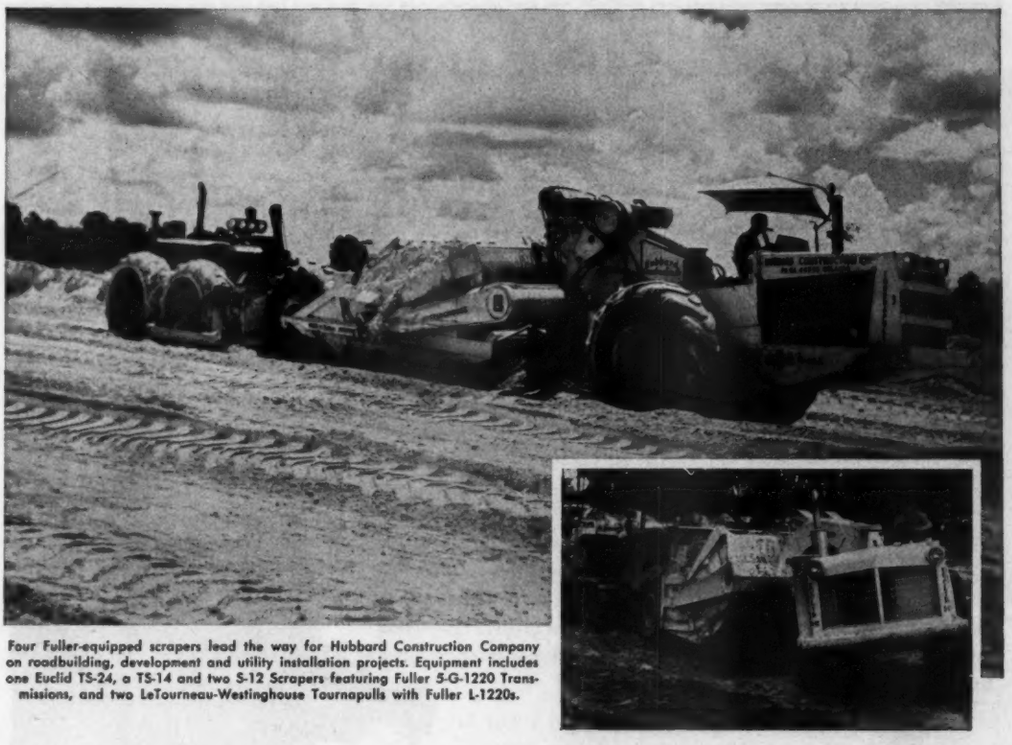


The compressor house at the central shaft location provides air for both tunnel headings. It houses twelve Joy compressors powered by Reliance motors and four Roots-Connersville blowers powered by General Electric motors.

were being built at shaft B to support the double heading to be started and maintained from this point. Some of the facilities include an electrical substation; an elevated water supply; a compressor building; a permanent head-frame tower and hoist; a concrete batch plant; a blacksmith shop; a sewage-disposal plant; and a permanent administrative building—for the Metropolitan District Commission—that will remain after construction is completed.

All the electrical power is being tapped from existing transmission lines. The 69,000 volts is being reduced, by the new substation, to 2,300, 440, 220, and 110 volts in order to handle various assignments at the site. The 2,300-volt power feeds the tunneling equipment, such as mucking machines, plus the pumps and the hoisting engine of the permanent head frame. In the tunnel, diesel locomotives move the muck cars. Compressed air powers the drill jumbo. The lower voltage is being used to

(*Continued on next page*)



Four Fuller-equipped scrapers lead the way for Hubbard Construction Company on roadbuilding, development and utility installation projects. Equipment includes one Euclid TS-24, a TS-14 and two S-12 Scrapers featuring Fuller 5-G-1220 Transmissions, and two LeTourneau-Westinghouse Tournapulls with Fuller L-1220s.

LESCHEN WIRE PORTER ROPE DIVISION
H. K. PORTER COMPANY, INC.
For more facts, circle No. 345

Geared by FULLER . . .

"We get faster work cycles and longer life with countershaft brake and pressure lubrication systems."

"Reliability, economy and serviceability are exceptionally important in purchasing new construction equipment," says J. C. Reddick, Vice President, Hubbard Construction Company, Orlando, Florida. "Fuller Transmissions meet the requirements for long life and fast work cycles that we must have in our scraper operations."

Fuller's countershaft brake gives quick, easy upshifts without double clutching, keeps speeds up and cuts cycle time. The pressure lubrication and filtration system prolongs gear and bearing life.

For long life, easy shifting and positive lubrication in your scraper operations, specify Fuller Transmissions which include the countershaft inertia brake and pressure lubrication and filtration systems.

Ask your dealer about these features designed to put more profit in your operation.

FULLER
TRANSMISSION DIVISION
MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN
Subsidiary EATON Manufacturing Company

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.
Automotive Products Company, Ltd., Automotive House, Great Portland Street, London W.1, England, European Representative
For more facts, use Request Card at page 18 and circle No. 346

Compressors feed into one air receiver, background. Air goes through Naylor 12-inch Spiralweld pipe to the shaft. At the shaft base are two 8-inch lines, one for each of the headings.

(*Continued from preceding page*)

supply the compressor engines, lights, and the usual housekeeping requirements at the site.

Water is being obtained from the existing aqueduct, located a few hundred yards from shaft B, by tapping into it and pumping the water through a 4-inch line. The water is pumped into an elevated and enclosed 10,000-gallon tank; it will run by gravity into the shaft and tunnel headings.

All the drilling in the tunnel is being done wet, and the vertical head between the elevated tank and the tunnel elevation is sufficient to force the water through the drill steel and bits during drilling.

A small auxiliary pump has also been installed at the tank building to supply pressure required for the showers and drinking water at the offices and crews' dressing rooms. The water is being chlorinated on the way to the elevated tank.

Air supply

Twelve Joy compressors, driven by Reliance electric motors and housed in a compressor building, supply all the air requirements on the job. The WN102 compressors feed 7,200 cubic feet of air per minute, at 100 psi, into a single air receiver. Six of the compressors feed into one 12-inch header, the other six into a second 12-inch header; both headers discharge into the receiver.

A single 12-inch line carries the air from the receiver down the shaft, where it is branched into two 8-inch lines—one for each heading. Also housed in the compressor building are 4 Roots-Connersville blowers—two for each heading—that are powered by General Electric motors.

The blowers are operated as exhaust fans throughout the drilling operations. The Naylor Spiralweld 36-inch line for each heading is extended in 30-foot lengths as the headings progress. These 30-foot extensions coincide with the 30-foot lengths of track for the locomotive and muck wagons.

Each heading is equipped with side-dump muck wagons to load the skip bucket of the permanent head frame. The head-frame hoist, a single-drum Lidgerwood using 2⅛-inch-diameter cable, is driven by an Elliot 600-hp

The Lidgerwood hoist of the permanent head-frame tower is housed in this building with the 600-hp induction motor that powers the hoist through a reduction gear.

induction motor through a Falk reduction gear. The hoist lifts the bucket skip from the tunnel floor; when the skip reaches the top of the head frame, it automatically discharges into a hopper. The hopper is controlled to load the Euclid end-dumps hauling the blasted granite to the spoil areas around the site.

Shaft cover

During the sinking of the shaft with the temporary head-frame tower, a shaft-cover door provided safety, as well as protection against inclement weather. It is also in use during tunnel driving. An air tugger is used to close and open the shaft cover. The cover is opened only when men, muck, machines, and materials have to be raised or lowered.

Other supporting facilities include the blacksmith shop, where all the steelwork, such as forming drill steel, sharpening drill bits, and shaping hangers and pins for the tunnel operation is being handled. The shop is equipped with an Ingersoll-Rand furnace and a Gardner-Denver sharpener.

The contractor is presently working three 8-hour shifts per day, for a 5-day week, and expects to complete the work by the fall of 1962.

Personnel

Marion Brown is the project manager; F. R. Fredrickson, the assistant project engineer; Kenyon Granger, the tunnel superintendent; and George Phillips, the project engineer for the joint venture.

THE END

To provide *SAFER* stopping power...

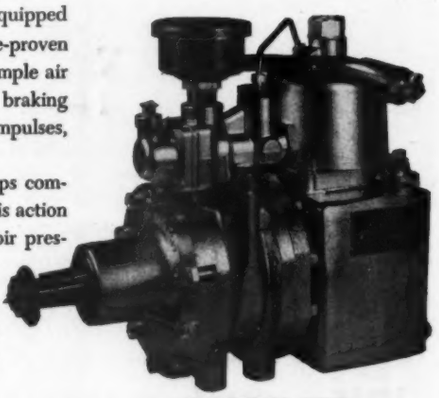
Wagner Lockheed

ROTARY AIR COMPRESSORS

deliver ample air for safe operation of brakes

You'll have plenty of air for safe, sure stops when vehicles are equipped with Wagner Lockheed Rotary Air Compressors. The time-proven rotary action contributes to rapid pressure recovery, assuring ample air reserve. This means safer stopping power even under severe braking conditions. Rotary action, with its overlapping air compression impulses, also contributes to smoother, quieter operation of unit.

Pumping is regulated by a control valve which starts or stops compression by "loading" or "unloading" the compressor proper. This action establishes an intermittent pumping cycle which keeps reservoir pressure within the desired range.



STANDARD TYPE

Available in either 9 C.F.M. capacity, air or water cooled; or 12 C.F.M. capacity, water cooled. Also in "Drive-Thru" type.

"DRIVE-THRU" TYPE Rotary Air Compressor is designed for use on diesel engine vehicles. It features all the advantages of rotary compression.

FOR DETAILS on these compressors, and information on complete Wagner Lockheed Air Brake Systems and Equipment for trucks, trailers, tractors, buses and off-the-road equipment, write for a copy of Catalog KU-201. REMEMBER, when ordering new equipment, be sure to specify Wagner Lockheed Air Brakes.

CONSULT YOUR WAGNER AIR BRAKE SPECIALIST

. . . There's one in every Wagner Branch. He is a factory trained expert who can assist you with your air brake program.

Wagner Electric Corporation

6364 Plymouth Avenue, St. Louis 33, Mo., U.S.A.

WEIO-4C

LOCKHEED BRAKE PARTS, FLUID, LINING and LINED SHOES • AIR HORNS • AIR BRAKES • TACHOGRAPHS • ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES

For more facts, use Request Card at page 18 and circle No. 347

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The modern look:

Unusual "umbrellas" are dealer trademark

Contractors & Engineers staff article

Hyperbolic paraboloid concrete shells cover the outdoor display space of Pape Bros. building in Eugene, Ore. The tall column forms the base for the big Pape-Cat sign.

An unusual outdoor display area that helps sell equipment is an immediate attention-getter for anyone visiting the new plant of Pape Bros., Inc., Eugene, Ore. What doesn't show at first glance is the efficient behind-the-scenes operation of this dealership.

Three hyperbolic paraboloid concrete umbrellas form a protective cover over the outdoor display area—and a striking display in themselves. Capitalizing on the appearance of the novel structures, Pape has effectively used pictures and drawings of the shells in its brochures and advertising.

The new layout, situated on a 20-acre tract on U. S. 99, about a mile south of Eugene, is one of the most modern equipment centers in the Pacific Northwest. The building was constructed of tilt-up concrete walls with a glued, laminated timber roof. The rooms in the air-conditioned office wing are tastefully finished in different species of native Oregon wood paneling.

The eye-catching inverted hyperbolic paraboloids stand at the front corner of the office building. Each is supported on a single reinforced-concrete column. The column of the small, high umbrella passes through the shell of the largest umbrella.

The largest shell measures 40×50 feet, and its base joins the column at a height of 22 feet above the ground. The second umbrella is 30×40 feet in size, and it stands 12 feet high at the haunch. The third shell, which serves primarily to accentuate the large company sign, is 12 feet square. The bottom of the sign is 40 feet above grade.

Vik Construction Co., Eugene, general contractor for the building, cast the two large shells in place, using plywood forms and timber shores. The smaller one was precast on the ground and set in place on the column by a crane.

Modern shop

More than half of the 35,600 square feet of floor space in the new building is taken over by the service facilities, and an additional 10,000-square-foot addition has been built for use as a rebuilding shop.

The high-ceilinged shop area is illuminated by mercury vapor lighting that provides a uniform distribution of high-intensity light, ideal for

(*Continued on next page*)

POWER-SET OUTRIGGERS

World's fastest outriggers set in about a minute

You can move more, lift more, earn more with "Power-Set"® Outriggers on Lorain Moto-Cranes. Just move in and let four hydraulically-powered curved beams take over. Rough terrain's no problem. Each beam is independently controlled and pivoted floats adjust to uneven or sloping ground. You get quick positive leveling the easy way. Wedge locks take over automatically for positive security.

Fast move-ups. Move around a lot on the job? Then "Power-Set" Outriggers will save you hours! In just 20 seconds all four outriggers retract to an eight-inch clearance for on-the-job moves. Another 20 seconds and they're reset, ready to go. They are so fast you no longer have to sacrifice maximum capacities to get rubber-tire mobility.

Contractors going places choose Lorain. For Lorain delivers the pace-setting features that build profits. "Power-Set" Outriggers . . . the 10-year warranted "Shear-Ball"® turntable connection . . . Square-Tubular-Chord booms—these are some of the design innovations that will pay off for you when you go Lorain. See your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

Campanella & Cardi Construction Co. of Warwick, R.I., finds that fast-acting "Power-Set" Outriggers on its 35-ton Moto-Crane speed operations. Equipped with a 70-ft. boom, this Lorain works on grading, drainage and bridge construction on Interstate Route 95 near Attleboro, Mass.

LORAIN ON THE MOVE

PLANTS: In Lorain, Elyria and Bucyrus, Ohio . . . PRODUCTS: Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity . . . OUTLETS: Lorain products sold and serviced by 249 distributor outlets throughout the world.

For more facts, use Request Card at page 18 and circle No. 348

Equipment is effectively displayed against a wall of the shop building. In this lineup, in the usual order, are trucks, a Hyster grid roller, D8 and D7 tractors, a 463 scraper, a DW20 tractor, a No. 14 grader, and the Skagit yarder-loader.

(Continued from preceding page)

shop work. Three overhead cranes in the shop have 18 feet of clearance to reach the largest machines with ease. The service crews work two full shifts to speed the shop operations.

Mechanics with fully equipped field-service trucks also cover the six-county area served by Pape.

The 8,000-foot-square parts-storage and handling area in the building provides ample room for the half-million-dollar parts stock, which includes approximately 50,000 separate items. A perpetual inventory system assures quick replacement of stock and a regular turnover.

A graduated loading ramp serving the parts department provides convenient loading and unloading heights for vehicles of many types and sizes. One self-leveling dock permits fork-lift trucks to operate between the dock and trucks for loading or unloading heavy materials.

Established in 1939

Pape Bros., Inc., is an outgrowth of the Farm & Industrial Equipment Co., which was formed in 1939 by the late Edward C. Pape. During its 21 years of life, the firm outgrew its old facilities in Eugene. The new firm in its new location is headed by H. Dean Pape, president and general manager, and E. C. Pape, vice president and general parts and service manager.

In addition to the new Eugene plant, there are branches at Roseburg and Coquille to provide quick local service for customers in those areas. Direct-wire teletype communications join the branches, the main store, and Caterpillar parts depots.

Pape's tractor line is augmented by products of such other manufacturers as Hyster, Fleco, Skagit, Martin, Athey, Ateco, Preco, Rome, and Ulrich. THE END

New P&H dealer in Mexico

The entire southern portion of Mexico has been assigned to a distributor in Mexico City by Harnischfeger Corp., Milwaukee, for the sale of P&H electric hoists and overhead traveling cranes. The company is Maquinas y Herramientas Sabin St. Germain, S. A., Marsella y Dinamarca No. 72, Mexico 6, D. F.

HEAVIER OUTSIDE WIRES mean great resistance to abrasion. FINER INSIDE WIRES mean excellent drum winding characteristics.

In REGULAR LAY ropes the wires are laid in a direction opposite to the lay of the strands. This provides stability even under severe operating conditions.

In LANG LAY ropes the wires and strands are laid in the same direction, providing exceptional flexibility and abrasion resistance.

Two ropes in one! Roebling Herringbone® Wire Rope is designed and made to wear better, work better, last longer than you can possibly imagine . . . unless you've tried it yourself!

Herringbone combines two pairs of Lang Lay strands with one pair of regular lay strands to give you maximum flexibility, good stability, mighty strength. Call your Roebling Distributor — or write for details to Roebling's Wire Rope Division, Trenton 2, N. J.

HERRINGBONE WIRE ROPE

ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation

For more facts, use Request Card at page 18 and circle No. 349

DUDGEON HYDRAULIC JACKS

SALES RENTALS

CAPACITY TO 600 TONS

FOR:
PILE TESTING
UNDERPINNING
BRIDGES
PIPE PUSHING

Write to Dept. M

DESIGNERS and MANUFACTURERS OF
Hydraulic Units For Special Applications

RICHARD DUDGEON INC. EST. 1860
789 BERGEN STREET BROOKLYN, N. Y.
• ST 9-4040 •

For more facts, circle No. 350

Credo for a dealer:

Know customers' problems

With his parts man out because of illness, Everhart takes his turn at waiting on customers. No novice at parts, he served his apprenticeship there.

By ED MANNIX
assistant editor

We arrived on schedule at the office of Walter I. Everhart, who is the manager of Credle Equipment Potsdam Corp. Everhart greeted us genially and settled back to answer our questions. Notebooks out and pencils poised, "First of all, some background information," we began—

Then the telephone rang. This was the first of several such interruptions, during which (we couldn't help but listen) we learned a great deal about this Potsdam, N. Y., distributor's method of doing—and keeping—business.

One thing that was immediately evident was the personal interest he took in his customers. He makes their job problems his own. Later, he stated his business philosophy in a more formal fashion: "The place with the best service is the one that's going to last. Service is everything; your customers have to like you and know they can depend on you." We knew he meant it. We had seen and heard him in action just a few minutes before.

New crane down? "We'll send a man right over and he'll stay with you today, tomorrow, and the next day, if necessary."

Trouble with a recently purchased scraper? Instructions to serviceman: "Go over there prepared for anything, and stay with it until she's running okay."

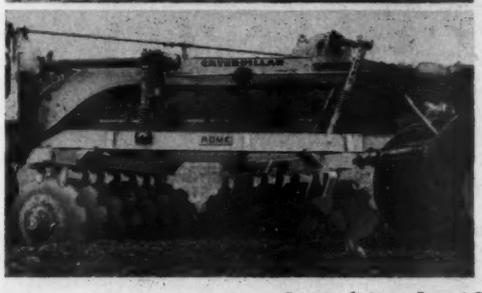
It was rapidly becoming clear to us that this distributor does more than manage his business. His contacts with his customers are very important to him—and to them.

During these telephone conversations we had ample opportunity to look about the office. One of the first things we noticed was the AED plaque prominently displayed on the wall. A series of framed photographs dramatically illustrated the brief history of the company. Between calls, Everhart enthusiastically described the beginnings of the firm and its growth.

(*Continued on next page*)

Walter I. Everhart, manager of Credle Equipment Potsdam Corp., Potsdam, N. Y.: "The place with the best service is the one that's going to last."

BUILD AND MAINTAIN ROADS THE ROME WAY



Here's the answer to your problems of mixing, pulverizing and aerating base materials in road construction and maintenance: the new Rome Model TAG Motor Grader Disk Harrow. With 16 disk blades 28" in diameter, the full power and traction of a Caterpillar No. 12 or No. 14 Motor Grader can be used to cut and mix material 7' wide on each pass. Spring-loaded lift links attach to the Motor Grader's blade and scarifier lift arms, giving the operator complete control over the harrow's position and penetration. This new tool is helping contractors to realize substantial savings in both secondary road maintenance and new construction. Your Rome-Caterpillar Dealer has the facts on a complete line of Rome Heavy-Duty Equipment to match your job and equipment. See him now.

ROME PLOW COMPANY, Cedartown, Georgia, U. S. A.

ROME

YOUR ROME DEALER IS YOUR CATERPILLAR DEALER

For more facts, use Request Card at page 18 and circle No. 351

Plan Your Future NOW!

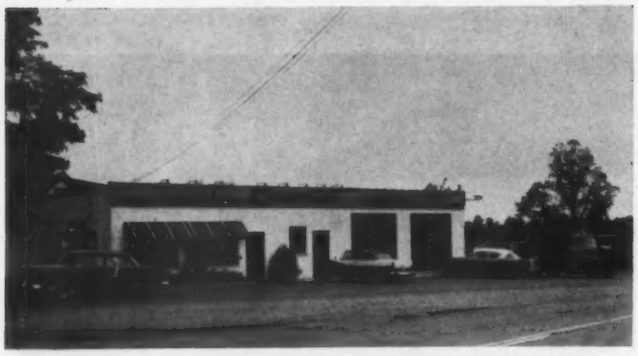
Insist on Lister DIESEL POWER for all your equipment

AIR-COOLED DIESEL POWER
AVAILABLE FROM 3-1/2 BHP TO 36 BHP
WRITE FOR COMPLETE DETAILS

Distributorships available in some areas

LISTER–BLACKSTONE, Inc.
42-32 21st Street, Long Island City 1, New York, Tel.: STillwell 6-8202
In Canada: Canadian Lister-Blackstone, Ltd., 1921 Eglinton Ave. E., Toronto 13, Ont.

For more facts, use Request Card at page 18 and circle No. 352



Originally a garage, this building houses office, parts department, and repair shop of Credle Equipment. The used-equipment yard is located at the rear.

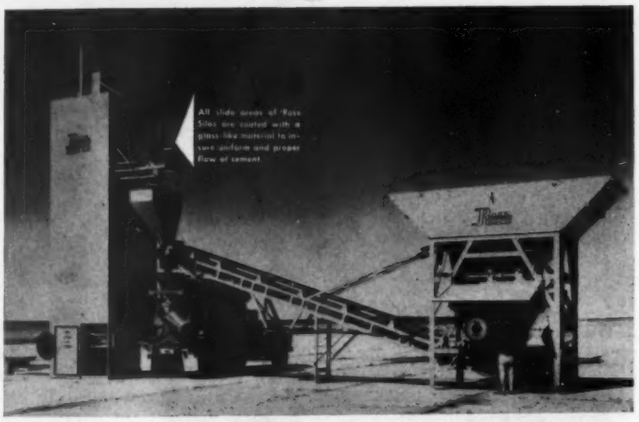
This GMC Model 100 half-ton pickup truck is used for field service calls. Hitched on behind is a P&H Model WN250, 325-amp portable welder for servicemen.

UNEXCELLED LEADER . . .

HIGHER PRODUCTION

GREATER ECONOMY

GREATER VERSATILITY



The Ross 30-3 Batching plant and 350-B bbl. cement silo are the proud products of Ross . . . the leading manufacturer of portable batching and equipment. Highly maneuverable, portable, easy to transport and set up, the Ross plant is the unexcelled leader in production.

CONTACT US FOR THE NAME OF THE DEALER NEAREST YOU

PORTABILITY IS NO SIDE LINE WITH US!

ROSS PORTA-PLANT

BOX 446 PHONE MI 3-4356 BROWNWOOD, TEXAS

For more facts, use Request Card at page 18 and circle No. 353

ROWCO **BRUSHKING** *SPEEDS* BRUSH CLEARANCE

NEW MODEL 660 does the work of 6 men

The new Rowco Brushking Model 660 — now 50% more powerful with 3 H.P. *throughout* — slashes through brush and trees up to 9" dia. Takes the work and waste out of forest, woodland and park clearance jobs. Cuts clean at ground level. Reaches into ditches. Limbs and trims overhead. With trimmer-cutter attachment, makes short work of heavy grass and weeds. Guaranteed shatterproof blade — complete operator safety. Pays for itself in a hurry!

Thousands in use. Write for free literature and name of your nearest distributor.

ROWCO MFG. CO., INC.
DEPT. CE-1, 48 EMERALD ST., KEENE, N.H.

For more facts, use Request Card at page 18 and circle No. 354

distributor doing

(*Continued from preceding page*

The company's founder, [illegible] Credle, started out small (operating out of his home) as a Utica, N. Y. distributor just prior to World War II. During the war he continued to operate on a modest scale. Shortly after the armistice, business grew sizably, and in 1946 he moved to his present location in Utica.

In that year, Everhart started with the Credle Co. as office manager. He continued in that capacity for about three years, when Credle decided to give him all-around training in the business. A year in parts followed; then he hit the road as a salesman until 1951.

Recognizing a growing potential in the Potsdam area, particularly for service (there were more than 100 P&H cranes and shovels in the area), Credle bought an old gas station and 50 acres of surrounding land in that town. On that site a new branch was opened, to be run by his three longest-term employees. These men were: Roy Davis, to handle sales; Howard Davis (Roy's son), to run the shop; and Walter Everhart, to take charge of the office and parts. So successful were these three that, after nine months, Credle decided to let them incorporate as a separate firm.

At the present time, Credle is president and owns one-third of the stock; Everhart is secretary-treasurer and owns one-half of the stock; and Howard Davis is vice president and owns the remaining shares. Roy Davis retired at the end of last summer.

There is an interesting interplay of function and aid between the two firms. All its own financing and purchasing are handled by the Potsdam outfit. However, this firm employs the Credle Co.'s accountants on a hired basis, and the bank in Utica, as well as the Potsdam bank, is used for financing. There is close cooperation with the Utica firm in supplying available equipment as needed, as well as in storage of equipment and other like matters. Because of the independent status of the Potsdam outlet, these transactions are conducted on a strictly business basis.

Accounts handled by both firms include P&H, FWD trucks, Diamond crushing equipment, Huber-Warco,

This 4,000-pound-capacity Scoopmobile with cable-lift bucket handles equipment and materials.

In the Credle shop, a Caterpillar tractor undergoes repair.

worth of new equipment on hand, and $50,000 worth of used, Everhart told us. Two or three pieces of equipment are out on rental at all times—with rentals often leading to sales.

The number of parts on hand—the majority of them are for P&H and FWD machines—runs to about 30,000. A Kardex system is used for parts inventory.

Following our interview, we had the pleasure of having lunch with Everhart. Judging from the frequency and warmth of the greetings he re-

(Continued on next page)

Schertzer equipment trailers, Curtiss-Wright, and Mixermobile. Potsdam also handles Joy compressors and other equipment, and the GMC truck line.

Seaway helped

A boon for the Potsdam firm was the nearby St. Lawrence Seaway project. During two of those peak construction years (1955–57) they did more than $1 million worth of business annually. Esco buckets (for the enormous excavation and digging job) accounted for a substantial portion of that figure, Everhart stated. With the completion of the Seaway, business tapered down to its present level, which is about $500,000 per year.

Eleven employees currently handle the work. There are five men in the shop (including Howard Davis): one parts man; an office staff of two; and, including Everhart, three salesmen. The territory includes four counties —St. Lawrence, Franklin, Clinton, and Essex.

Shop work

Escorted by both Everhart and Davis, we went back for a look at the shop. There, we found a Caterpillar D7 tractor and FWD Model 324 truck under repair. Shop equipment included a Quincy 60-cubic-foot compressor; Superior 2-ton crane on a shop-made frame for lifting engines and other components; Erie lubrication dispensing equipment; Airco acetylene welder—also a P&H welder; a Jenny steam cleaner; and an Ideal press.

There is usually about $50,000

AT THE TOUCH OF A BUTTON

the Electrol GenerAC will supply shop-type electrical power from your truck, car or tractor — anytime, anyplace.

This high-output, 115/230-volt, 60-cycle alternator is available in a size for your every requirement.

Mounting is simple, with kits available for all popular makes of vehicles.

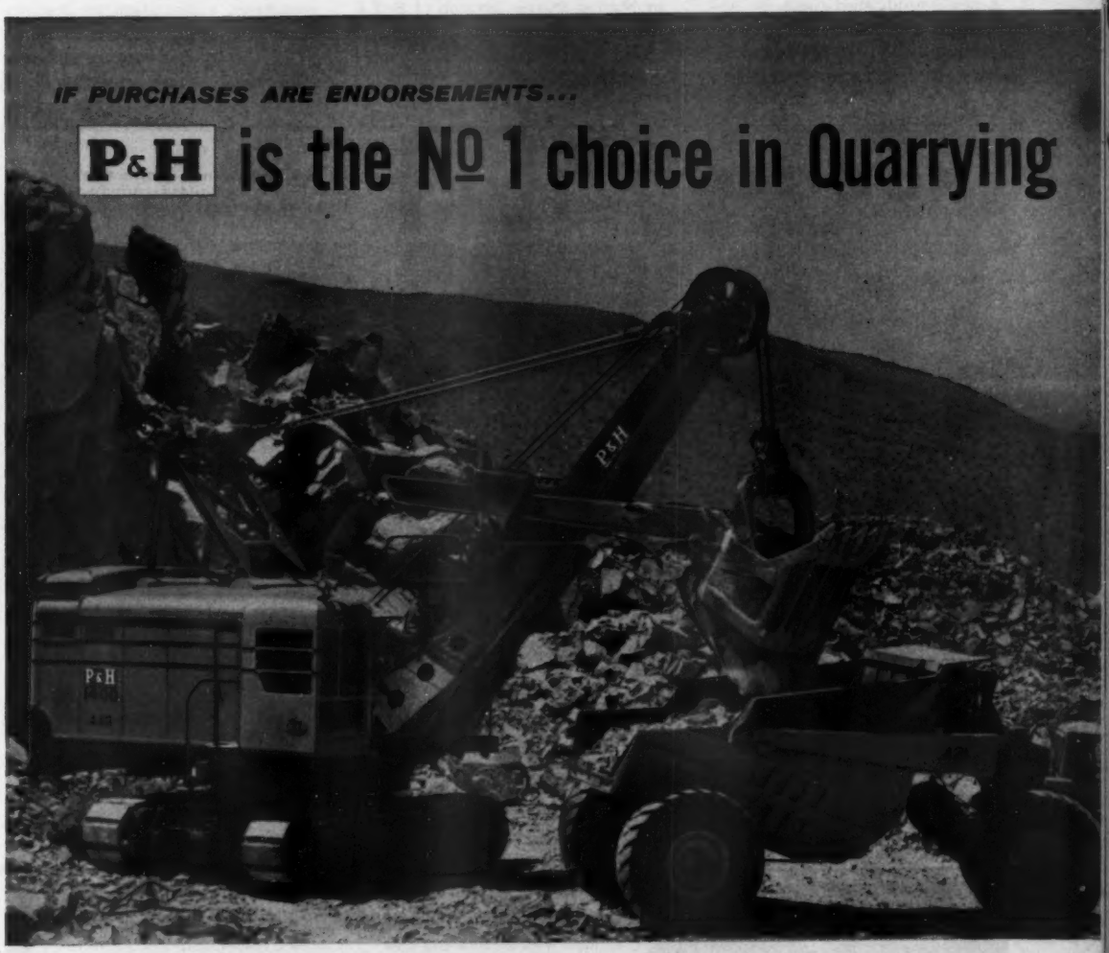
Write to

GenerAC Sales Inc. 124 S. Main Street Wales, Wisconsin

For more facts, use Request Card at page 18 and circle No. 355

IF PURCHASES ARE ENDORSEMENTS...

P&H is the № 1 choice in Quarrying



IN THE LAST 5 YEARS 75% OF ALL ELECTRIC SHOVELS INSTALLED IN U.S. QUARRY OPERATIONS HAVE BEEN P&H

4½-cubic yard P&H Model 1400 is also built as a diesel-electric to provide its own integral electric power supply for operation in areas remote from public utility sources.

P&H has earned this widespread acceptance in the quarrying industry because of lower per-ton loading cost. This day-to-day benefit to owners of P&H Electrics results from two basic advantages:

1. **Higher rate of production** made possible by exclusive, patented P&H design principles: MAGNETORQUE® Hoist Drive and Electronic Control.
2. **Vastly superior service and parts availability** reflecting Harnischfeger Corporation's partnership philosophy of responsibility to buyers of its products.

Compare before you buy—for more information write today to Dept. 533-A Harnischfeger Corporation, Milwaukee 46, Wisconsin.

HARNISCHFEGER P&H
Milwaukee 46, Wisconsin

For more facts, use Request Card at page 18 and circle No. 356

distributor doings

ceived from other diners—mainly fellow businessmen and municipal officials—he is a popular man in the town of Potsdam. A firm believer that taking an active part in community affairs is "good for the company," he is an Elk, a Mason, and a Lion.

Everhart, incidentally, ate a hearty meal. He should. He works hard.

THE END

New GM Diesel dealer

A newly established company, Abbott-Glass GM Diesel, Inc., 56 W. Seventh S., Salt Lake City, has been appointed distributor for GM Diesel engines, made by Detroit Diesel Engine Division, General Motors, Detroit, Mich. The company will handle sales, service, and parts in Utah and in several bordering counties in Nevada, Oregon, Idaho, and Wyoming. A branch has also been established at 900 E. Park Blvd., Boise, Idaho.

President of the new firm is R. G. Abbott; vice president is E. W. Glass, Jr., who will head the Boise branch.

Marlow sales award

An award for achieving the highest amount of sales for construction pumps was presented to Ted Baehr by Marlow Pumps Division of Bell & Gossett Co., Midland Park, N. J. Baehr is with the Foundation Equipment Corp., Long Island City, N. Y.

LeTourneau dealer in S.A.

R. G. LeTourneau, Inc., Longview, Texas, has named a dealer in Venezuela for the sale of its products, including electric sheepsfoot rollers and diggers, cranes, and transporters. The firm of Lorenzo Bustillos M. & Cia. Sucs. C.A. of Santa Teresa A Cruz Verde No. 12, Caracas, handles parts and service for LeTourneau equipment.

New dealer for B-E

Cate Equipment Co., 1132 S. 4th St., Salt Lake City, Utah, has been appointed a distributor by Bucyrus-Erie Co., South Milwaukee, Wis., for a full line of B-E convertible crane-excavators; dragline buckets; 10, 15, 25, and 45-ton-capacity Transit-[illegible] chines; and 5 and 12-ton-capa[illegible] truck-mounted, all-hydraulic Hy[illegible] crane equipment.

Cate offers sales and service in [illegible] of Utah, and the counties of [illegible] White Pine, and Eureka in Ne[illegible] and Uinta and Lincoln in Wyo[illegible]

Worthington appoints four new distributors

Distributors in four states [illegible] been named by Worthington Co[illegible] Harrison, N. J. The firm's pr[illegible] compressors, mobile drills, and [illegible] tractors' pumps and tools will [illegible] handled in 15 Wyoming counties [illegible] Buckhorn Equipment Co., 521 E. [illegible] St., Cheyenne, and in 16 Pennsylva[illegible] counties by Ensminger & Co., [illegible] 57 Wood St., Wilkes-Barre.

In Michigan, Hasper Equipm[illegible] Co., 2871 Westland Road, Muskeg[illegible] will distribute these products, as w[illegible] as mixers, aggregate reclaimers, [illegible] pavers. Its territory covers 27 co[illegible] ties.

The distribution of Worthingto[illegible] construction equipment in 50 Indian[illegible] counties has been assigned to South[illegible] wood Machinery Sales, 610 W. Mai[illegible] St., Greenwood.

Parker-Hannifin adds seven distributors

Parker-Hannifin Corp., Cleveland, Ohio, has named two new distributors for its industrial hose and re-usable hose fittings, made by the Parker Fittings & Hose Division, Cleveland. Coleman Co., Inc., 305 Rutherford Road, Greenville, S. C., and Keller Industrial Products, Inc., 217 East Ave., Rochester, N. Y., will handle these products.

Three companies have been appointed dealers for the Crown line of components for compressed-air service made by the Hannifin Co. division in Des Plaines, Ill. They are: Clem W. Weston Co., 1124 Burgundy St., New Orleans, La.; Industrial Technical Sales & Service, Inc., 650 Park Ave. West, Mansfield, Ohio; and Holden Engineering Co., 2108 Payne Ave., Cleveland.

The distribution of both the Parker tube and hose fittings and the Crown compressed-air units has been assigned to The Park City Supply Co., 63 Knowlton St., Bridgeport, Conn., and to Specialties, Inc., 1406 Leslie Ave., Alexandria, Va.

Highway Equipment names three dealers

Three new distributors have been appointed by Highway Equipment Co., Cedar Rapids, Iowa, to handle the HI-WAY line of ice-control equipment, self-propelled and towed-type chip spreaders, and asphalt pavers.

Parkway Machinery, Inc., 635 Ridge Ave., Pittsburgh, Pa., covers Pennsylvania west of and including the counties of McKean, Cameron, Clearfield, Blair, and Bedford. In West Virginia, Parkway will be responsible for the counties of Marshall, Ohio, Hancock, and Brooke; and in Mary-

FLECO® FACT FILE

. . . job reports from contractors using Fleco specialized equipment to boost profits on difficult jobs.

Curved teeth, of the Fleco Rock Rake, get under rocks, brush, or trees to roll them into a pile with little effort. Soil sifts through, making dirt-free, easy-to-burn piles.

Piles burn quickly, with a Fleco Fire Fan directing a 32 m.p.h. gale on the fire. Fuel oil is safely sprayed on the fire to make burning complete.

The business end of this PT-7 Fleco Pull Stumper shows 27,000 pounds at work! All the tractor's drawbar pull is put to work, ripping through roots, ripping out stumps. The cast-steel tooth, on the welded box beam frame, bites into stumps, rocks, trees or other objects, 30 to 40 inches down; forward motion of the tractor completes the task. For D9, D8, D7 and D6 Tractors.

FLECO®
Multi-Application Rock, Root, Brush and Trax cavator Rakes • Root Plows
• Cab Guards • Choppers
• Pull and Detachable Stumpers
• Fire Fans • Treedozers
• Root Cutters • Tree Cutters
• Undercutters

For more facts, see your Caterpillar-Fleco Dealer or write direct . . .

FLECO Corporation

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Fleco International, Inc. • Fleco Overseas Limited
P. O. Box 820, Nassau N.P., Bahamas

5

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Look beyond the price tag and you'll see why

POWERS
Service-Master
OUTSELLS ALL OTHER MAKES OF SERVICE BODIES COMBINED

Precision-crafted by expert workmen who grind welds marble-smooth and finish off all dangerously sharp tray and shelf edges.

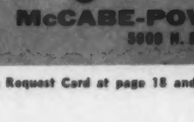
Compare doors! Open and slam ours . . . then competitors'. Note our "solid" sound, balanced "feel", superior construction, and "can't-bind", nylon bushings.

Check the styling . . . the modern wheelhouse design . . . the flight-swept, tapered rear. You'll find no other body with so many features.

Finest recessed latches on the market. Fool-proof, safety catches make it impossible for doors to fly open in travel.

Concealed fenders with built-in "lastability" assure at least 10 years of rugged service . . . truly your best body buy.

IMMEDIATE DELIVERY! WRITE FOR BULLETIN AND NAME OF DEALER.



Optional Canopy Top, at left, has 53" floor-to-roof height. Body is also available with compartment-high telescopic roof.

McCABE-POWERS BODY COMPANY
3000 N. BROADWAY • ST. LOUIS 15, MO.

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land, Garrett and Allegany counties.

Moody Equipment & Supply Co., 8820 New Benton Highway, Little Rock, Ark., has been named distributor for Arkansas west of and including the counties of Sharp, Independence, Jackson, Woodruff, Monroe, Arkansas, Lincoln, Drew, and Ashley.

In West Virginia, Porter Supply Co., Inc., 1703 Seventh Ave., Huntington, will serve the entire state with the exception of the counties of Hancock, Brooke, Ohio, Marshall, Morgan, Berkeley, and Jefferson.

C. S. Johnson names dealer

The C. S. Johnson Co., Champaign, Ill., a division of Koehring Co., has appointed Pelican Machinery Co., Bossier City, La., distributor for northern Louisiana.

Pelican will handle the complete line of C. S. Johnson products, including concrete batching plants and equipment, Koehring-Johnson construction mixers, clamshell and concrete buckets, and electronic controls for automatic batch plants and concrete pipe and block plants.

M-W Equipment names

Warren Beach has been appointed service manager of M-W Equipment Co. at Hunting Park and Fox Streets, Philadelphia, a division of Metal-weld, Inc. He will supervise the repair, rebuilding, and service of all types of construction machinery.

B-L-H distributors

Contractors Machinery Co., Grand Rapids, Mich., has been named a distributor for the Lima Model D and Super Roadpacker, self-propelled vibratory compactors made by the Construction Equipment Division, Baldwin-Lima-Hamilton Corp., Lima, Ohio. Located at 5311 Plainfield Ave. N.E., the dealer is serving ten counties in northwestern Michigan.

Story Bros., Inc., 4130 Clinton Highway, Knoxville, Tenn., is handling Lima shovels, cranes, draglines, and pullshovels, as well as the Roadpacker, in seven counties in eastern Tennessee and four counties in Georgia. Story has a branch office at 919 Dodds Ave., Chattanooga, Tenn.

General Tire appoints

Flanagan Supply Co., 909 E. Madison St., Phoenix, Ariz., has been named a distributor of vinyl floor covering for the building materials division of The General Tire & Rubber Co., Akron, Ohio.

Ohio distributor expands

Northeastern Equipment Co., Inc., Cleveland, has tripled its sales and service facilities by opening new headquarters at 5120 Richmond Road, Bedford Heights. The dealer covers a 23-county area in northern Ohio.

Lines carried include Pettibone Mulliken tractor shovels, Lima Roadpackers, and Essick rollers.

Fulton appoints two

Fulton Cotton Mills, Atlanta, Ga., has appointed two manufacturer's representatives for Fulton and Fultex tents, tarpaulins, and other canvas products. They are Robert M. Barnes Co., New Orleans, La., which will cover Louisiana, Arkansas, Texas, and Oklahoma; and John O. Doxsee Co., Mission, Kans., which will serve Kansas, Missouri, Iowa, and Nebraska.

Le Roi distributor adds

The Crook Co., southern California dealer located at 2900 Santa Fe Ave., Los Angeles; 2314 N. Chester Ave., Bakersfield; and 2146 Main St., San Diego, has been named by the Le

(Continued on next page)

During 1959, 84.5 million motor-vehicle operators' licenses were in force in the United States. This is 3.5 per cent higher than the total for 1958.

WINSLOW—PORTABLE TRUCK SCALE

THE CONTRACTORS' SPECIAL SCALE

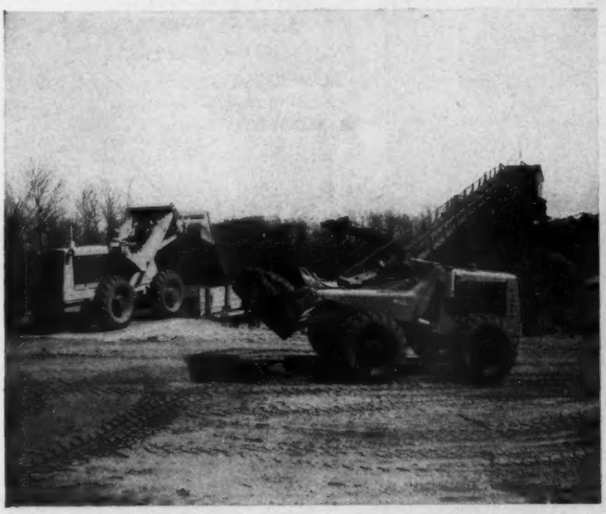
For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor.

WINSLOW SCALE COMPANY P.O. Box 1198 Terre Haute, Indiana

For more facts, use Request Card at page 18 and circle No. 377

THREE FAST-MOVING MOTO-LOADERS



KEEP BLOCK PLANTS HUMMING

A trio of Lorain Moto-Loaders® help Best Block Company of Metuchen, New Jersey, produce over six million blocks a year.

A ML-153 (with 6,000-pound carrying capacity) and a ML-157 (7,000-pound carrying capacity) are used at two of the company's plants. They load trucks with Aglite . . . feed sand and cinders into conveyer fed hoppers. Another ML-157 loads out washed sand into trucks.

How are they performing? Thomas Swales, President, provides the answer: "Our Moto-Loaders have the ability to serve our block plant needs even during peak service. The One-Foot Travel Control gives us the speed of operation we need."

See how Moto-Loader design balances power, control and weight to speed *your* loading cycles. Ask the Lorain distributor in your area for a demonstration.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

One-foot travel control boosts payloads . . . frees operator's hands for steering, bucket control and other operations. By pivoting his foot between two adjacent pedals, operator controls direction—forward and reverse. Speed is controlled by depressing pedal further.

LORAIN® ON THE MOVE

PLANTS: In Lorain, Elyria and Bucyrus, Ohio . . . **PRODUCTS:** Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity . . . **OUTLETS:** Lorain products sold and serviced by 249 distributor outlets throughout the world.

For more facts, use Request Card at page 18 and circle No. 359

distributor doings

Roi Division, Westinghouse Air Brake Co., Milwaukee, to sell and service its S2 line of large stationary air compressors. The firm also distributes Le Roi portable air compressors and Newmatic air tools for the construction industry.

Schramm names dealers

Dal-Tex Equipment Co., Inc., 3226 Cedar Crest Blvd., Dallas 3, Texas, has been appointed northeast Texas dealer for Schramm, Inc., West Chester, Pa. Dal-Tex will handle Schramm portable and self-propelled compressors and construction tools, offering complete sales, rental, and service facilities.

Tonawanda Equipment & Leasing, Inc., Towanda, Ill., has been named a Schramm dealer in central Illinois.

Ogden Equipment Co., 2361 Edwards Ave., Jacksonville 5, Fla., will handle Schramm equipment in northeast Florida.

Daybrook dealer

South Florida Engineers, Inc., has been named sales and service representative for the complete line of truck equipment made by Daybrook Hydraulic Division, Young Spring & Wire Corp., Bowling Green, Ohio. Newly located at 8th Avenue and 40th Street in Tampa, the company will be responsible for 25 counties in central Florida.

Rasmussen Equipment adds

Johnnie Cox has joined the sales staff of Rasmussen Equipment & Supply Co., Salt Lake City, Utah. The company, at 1960 South 2nd West, carries a full line of construction equipment and supplies.

Miller Swivel appoints

Minneapolis Equipment Co., 520 Second St. S.E., Minneapolis, has been named Minnesota distributor for Miller Swivel Products, Inc., Pomona, Calif. The company will handle Miller's complete line of products for the construction industry.

Ellicott licenses firm in India to build dredges

■ Ellicott Machine Corp., Baltimore, Md., has made a licensing agreement with The Hooghly Docking & Engineering Co., Ltd., Calcutta, by which the latter firm will build dredges and dredging equipment in India. Hooghly is building dredges of all types and sizes in accordance with Ellicott designs and specifications. The tie-in of Ellicott's experience and Hooghly's manufacturing facilities will aid India's program for development of rivers and harbors.

Harnischfeger promotes

■ Harnischfeger Corp., Milwaukee, Wis., has made Donald C. Ribbe manager of the Birmingham district office for P&H construction and mining equipment. He has been sales representative there for a year.

The territory now includes all of Alabama, middle and eastern Tennessee, and the western panhandle of Florida.

HRB publications index

■ The Highway Research Board has put out an index of its publications from 1956 through 1959. Listed are papers and reports presented at the 35th through 38th annual meetings, as well as bulletins, special reports, research reports, bibliographies, current road problems, roadside-development reports, and highway research reviews. Each publication is listed under a subject index and an author index.

The 129-page book, "Publication Index 1956–1959," is available for $2.60 from HRB, 2101 Constitution Ave., Washington 25, D. C.

American Cyanamid names

■ New manager of the explosives and mining chemicals department of American Cyanamid Co., New York, N. Y., is B. R. Putnam, former department manager in the petrochemicals department. From New York headquarters, Putnam will direct all of the company's commercial operations related to the marketing of explosives and mining chemicals.

Cleveland Trencher news

■ J. Rowland Doyle, formerly assistant chief engineer for the Oliver Corp., has joined The Cleveland Trencher Co., Cleveland, Ohio, as chief engineer.

Parker-Hannifin changes

■ Donald W. Lange has been appointed sales engineer in the Chicago office of the Parker-Hannifin Corp., Cleveland, Ohio. He was previously assistant product sales manager on cylinders with the Hannifin Co. division. In his new post, Lange will handle the company's industrial pneumatic and hydraulic products.

The Parker Hydraulics Division has added William M. Hardy to its sales-department staff.

LOW COST...EASY OPERATION

Rivinius

LIVE POWER STEERING for CAT D8 Tractors

(prior to 14A models)

SAVES MAN-POWER: Operator fatigue goes down... performance goes up! Finger tip control Live Power Steering provides closer, faster control of D8 power and maneuverability.

SAVES CLUTCHES: No wasteful slippage and clutch wear...on each turn the clutches are engaged smoothly into complete seizure.

SAVES TIME: Levers move only 1½" and return automatically when released. Operators report they can operate a D8 one, sometimes two speeds faster with Rivinius Live Power Steering.

SAVES DOLLARS: This new Rivinius system is compact, easy to install on D8's in the field...consists of hydraulic cylinder, valve, pump, reservoir, brackets and hardware.

See your Caterpillar dealer now...or write:

Rivinius, Inc.

EUREKA, ILLINOIS

For Caterpillar Motor Graders: Torque Steering Booster ...Hydraulic Moldboard Shift...Snow Blower...Snow Loader

For Caterpillar D8 Tractors: Live Power Steering

For more facts, use Request Card at page 18 and circle No. 362

A NEW ANGLE IN EARTHBORING...

WILLIAMS!

For installation of drilled piles and caissons, both vertical and battered, a Williams digger is your best angle for greater profits.

- **Because of low maintenance cost.**
- **Because of mobility and versatility.**

Now with greater and more complex load factors dictating the use of larger diameter piers, the penetration of harder strata, and the installation of battered piers, it is becoming more important that the foundation drilling contractor have the best in equipment.

The contractor using Williams foundation diggers has eliminated many of his toughest problems:

- **Set up time minimized.**
- **Drilling at angles other than vertical is simplified.**
- **Penetration of harder materials is made possible.**

For fast, efficient production of drilled shafts for structure foundations, Williams equipment is the *exclusive angle.*

MODEL LDH 55 FEATURES

Hydraulic down-crowd
240 degree turntable
Hydraulic outrigger jacks
Service hoist
6 forward and 2 reverse rotary speeds.

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JOSLYN MFG. & SUPPLY CO.
2101 Corinth St. • Dallas, Texas
for DESCRIPTIVE LITERATURE

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Earthmoving contractor reclaims bottom land

■ Deep plowing done by an earthmoving contractor has increased the value of some Illinois farmland from about $275 an acre to about $600. In 1943, a flood left an average of 23 inches of sand and silt on the fertile bottom land along the Salt Creek in Mason County, Ill., making some 1,000 acres almost sterile. The problem was to get the rich soil underneath back on top.

Recently the Doyle & Pottorf Construction Co. went to work on 50 of these acres. A large Post Bros. plow was hooked to an Allis-Chalmers HD-16 crawler tractor pulled in tandem by an HD-15 and another HD-16. The cable-controlled plow did its best job in most places when set at a depth of 40 inches, but it had to be constantly changed since the thickness of the sand and soil varied.

Between ¾ and 1 acre of land was plowed per hour. Then it was leveled with an HD-16 dozer, and the crawler leveled it further with a drag consisting of two 25-foot I-beams. Finally the area was disked with an 18-foot harrow to loosen the soil. As a result of this reclamation work, about 70 per cent recovery is expected for the once idle land.

A huge plow, pulled by two Allis-Chalmers HD-16's and an HD-15, goes down an average of 40 inches to turn up fertile bottom land that a flood covered with sand and silt 17 years ago in Mason County, Ill. Work is being handled by Doyle & Pottorf Construction Co., which does a lot of soil conservation work.

A-C moves sales manager

■ Charles D. Moore has been transferred to the Minneapolis branch of Allis-Chalmers Mfg. Co., Milwaukee, Wis., to be sales manager for the Construction Machinery Division. He formerly held the same post at the St. Louis and Des Moines branches.

Firestone building new plant in France

■ At Bethune, France, a multimillion-dollar tire factory is being constructed by The Firestone Tire & Rubber Co., Akron, Ohio. It is the company's 18th such plant overseas and will produce a full line of tires and tubes for the European market.

Chief engineer at Clyde

■ Clyde Iron Works, Inc., Duluth, Minn., has appointed Harry T. Bratt chief engineer. He was previously vice president of American Hoist Pacific Co., Seattle, Wash.

New Winch-Hoist Works Off Battery or 110-Volt Circuit

$237.50 BATTERY MODEL

$280.00 110-VOLT MODEL

SIZE 22" x 12" x 14"

The new MY-TE all-purpose winch and hoist will outpull and outlift any other unit in its price class. Saves time, work, money! Mounts on car, truck, boat, etc., with just 6 bolts. It's portable; can be shifted from one job to another by one man. Drum capacity: 150 ft. of ¼" cable. Remote cable has forward-reverse control.

BATTERY MODEL Works off any 6- or 12-volt battery. Lifts 2500 lbs.; pulls 5000 lbs.; Weighs just 60 lbs. $237.50 fob, Indianapolis.

110-VOLT MODEL Works off 110-volt circuit, single phase, 60-cycle ac current. Lifts 1500 lbs. Weighs just 57 lbs. $280.00, fob, Indianapolis.

FREE Bulletin . . . Dealer Inquiries Invited

CITY ENGINEERING CO., INC.

2547 Massachusetts Ave. • Indianapolis 18, Ind.

For more facts, circle No. 364

LARGEST LINE OF STEEL PRODUCTS FOR HIGHWAYS

Hollow and solid drill steel
Digging bars

Rock anchor bolts

Bar mats
Dowel units
Road center strip
Reinforcing bars and accessories
Fabricated reinforcing bars
Hook-bolt dowels for concrete slabs
Steel roadway curbs
Nails and form wire

Beam guard rail
Cable guard rail
Steel guard posts
Galvanized bridge rail
Wire fence
Steel fence posts

Steel sheet and H-piles
Pipe piles

Formed steel bridge floor
Cables for suspension bridges
Structural steel shapes
Steel plates
Timber bridge hardware
Fabricated steel bridges, buildings
High-strength bolts, rivets
Corrugated roofing and siding

Wrought steel pipe
Galvanized culvert sheets

Strand for prestressed concrete
Wire rope and wire rope slings

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

Export Distributor:
Bethlehem Steel Export Corporation

Steel — for strength . . . economy . . . versatility

BETHLEHEM STEEL

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 365

TREATED BASE

Base material for the calcium-chloride-treated half of a 5-mile experimental project in Story County, Iowa, spills from this twin-shaft pugmill.

A dispenser adds 8 pounds of calcium chloride to each ton of material on its way to the surge bin. The double-shaft pugmill was used because a single-shaft pugmill did not coat each particle with water.

A truck dumps to a Jaeger mechanical spreader. With blade spreading eliminated, there is a chance of segregation and change in gradation by the motor patrol and blade.

Treated vs. untreated base

Experimental project in Iowa shows equipment working longer and harder on untreated section

UNTREATED BASE

On the untreated stretch, base material—turned out by a single-shaft pugmill—is not laid to proper cross section on the roadway until a water truck comes along to dampen the subbase.

A contrast in methods of base construction was pointed up by an experimental base project in Story County, Iowa, where half of a 5-mile project was treated with calcium chloride and the other half was left untreated. This was the job's big difference, for both of the roadway sections were built in about the same manner.

Methods differ

The methods used differ from current Iowa practice, which calls for material to be road-mixed by a grader, with a water wagon adding moisture, as needed, until the desired water content is obtained. The base material is then spread, and a sheepsfoot roller, or other unit supplying the same compactive effort, compacts the base. Finish rolling is handled by a 10-ton pneumatic-tire roller followed by a steel roller.

This job was handled by Highway Surfacers, New Hampton, Iowa, with base-material production sublet to Cook Construction Co., Ames, Iowa. The calcium-chloride-treated base was turned out by a double-shaft pugmill mixer, since a single-shaft unit was unable to coat each particle with moisture. Eight pounds of calcium chloride was used per ton. The material, trucked to the roadway and dumped to a Jaeger mechanical spreader, was given initial compaction by a Bros 21-ton pneumatic-tire

A motor grader shapes the base material. On this 2½-mile untreated section, watering became important because the material tended to dry out from the top down, creating wet and dry areas.

Compaction by a Buffalo-Springfield 21-ton Kompactor follows before the grader cuts the edges of the base to proper width. Rigs spent more time working on the untreated base and handling material.

When the grader returned to cut the edges, the base had taken a slight V-shape that made it about 3 inches lower in the center than at the edge. The grader made additional passes before final rolling.

A Bros 21-ton pneumatic-tire roller works just behind the Jaeger spreader. On initial compaction the 9 inches of loose aggregate was compacted to a 6-inch base. Rolling was directed toward the center to provide a good construction joint.

A motor grader then comes along to cut the edges and distribute the material over the surface, and a 10-ton rubber-tire roller follows to obtain final compaction of the base. Oil density tests showed 98 per cent density.

roller, which compacted 9 inches of loose aggregate into a 6-inch base. A grader then came in to cut the edges and distribute the material over the surface. A 10-ton rubber-tire roller applied final compaction. No water wagon was needed on the roadway throughout this operation.

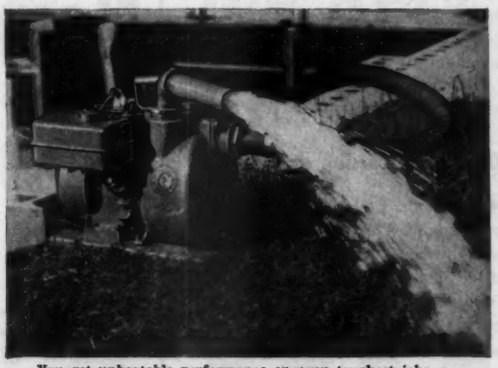
Watering needed

Watering, however, was a requisite on the untreated section, which had base material turned out by a single-shaft pugmill. Trucks hauling to the road dumped the material for blade mixing and spreading to proper cross section by a grader. A Buffalo-Springfield Kompactor handled initial compaction, and the grader then returned to cut the edges of the base to proper width. A 10-ton pneumatic roller followed the grader.

On this section, the water wagon was needed, for the base, drying out from the top, showed alternate wet and dry areas. A considerable amount of handling was also required on this half of the project, and a greater amount of working time was spent by equipment to bring the material to required density. THE END

A 10-ton pneumatic roller follows. Much rolling and watering—increasing the chances of segregation—were needed to obtain required density.

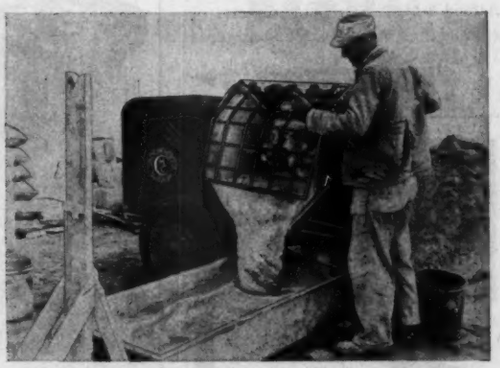
Make more money on any type pour with **CMC steel and aluminum Transcretes.** The most complete line offered by any manufacturer. 36 models. Five sizes to 7-yards mixing capacity.



You get unbeatable performance on even toughest jobs . . . and at lowest cost with **CMC Dual Prime Pumps.** All sizes from 1½" to 10" . . . capacities to 240,000 gph. Also Hi-Pressures.

CMC big profit boosters . . .

Today's easiest to handle, biggest performing pumps . . . the new **CMC WONDER-Lite line of LIGHTWEIGHTS.** The 3" model pictured weighs only 97 pounds . . . pumps 19,000 gallons of water per hour. 1½" to 3" sizes.



For speeding up work, saving many man hours on every job . . . you can't beat **CMC "WONDER" Plaster and Mortar Mixers.** Available all sizes including popular 4 cu. ft. Hoe-Boy.

Mail coupon for *FREE* literature on these CMC money-makers

CONSTRUCTION MACHINERY CO., Waterloo, Iowa

Rush new FREE literature on . . .

☐ CMC Transcrete Mixers ☐ CMC Lightweight Pumps ☐ CMC Building Mixers
☐ CMC Dual Prime Pumps ☐ CMC Hoe-Type Mixers ☐ CMC Hoists

Name _____

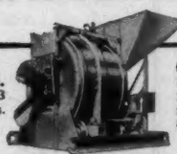
Company _____

Address _____

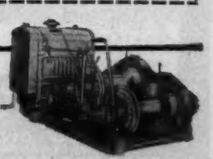
City _____ State _____

ALSO:

CMC Building Mixers from 3½S to 16S sizes.



CMC Central Plant Mixers. 1, 2, and 3 yd. capacities.



CMC Hoists. Single and multiple drum models from 8 to 45 H.P.

CONSTRUCTION MACHINERY COMPANY, WATERLOO, IOWA

For more facts, use coupon or Request Card at page 18 and circle No. 366

Marks 25th anniversary as highway engineer

Wisconsin state highway engineer E. L. Roettiger, who presently holds the record among the nation's state highway engineers for longest service to a highway department, observes this year his 25th anniversary in the post. Roettiger is a member of the American Society of Civil Engineers, the Wisconsin Society of Professional Engineers, and is treasurer of the American Association of State Highway Officials.

Burns & Roe promotes

Burns & Roe, Inc., consulting engineering firm of New York, N. Y., has named Melbourne A. Forrest a vice president. Forrest was made director of the power and industrial-facilities division last year. He will continue to be responsible for these operations, as well as for defense and aeronautical projects.

The company is celebrating its 25th anniversary this year.

B-E names sales engineer

■ Robert J. Urlakis has been named sales engineer for Winkie drills, a line of lightweight, portable diamond core drills made by Bucyrus-Erie Co., South Milwaukee, Wis. He is responsible for all phases of the domestic and export sales program. Since 1956, Urlakis has been sales engineer in the company's International Division.

Pomeroy assigns three to engineering posts

J. H. Pomeroy & Co., Inc., San Francisco, Calif., international engineering and construction firm, has named Earl T. Van Geem director of engineering. He will continue to serve as assistant vice president of foreign operations.

Fred H. Baastad was appointed manager of Pomeroy's engineering division, and William J. Talbot, Jr., was named chief engineer.

For more facts, use Request Card at page 18 and circle No. 368

Iowa highway employees get information booklet

■ The Iowa State Highway Commission has provided 3,000 employees with a 24-page orientation booklet, entitled "The Road Ahead." It is intended to acquaint them with the functions of the commission, as well as their own duties and privileges within the organization.

Rotadrill sales head named by Schramm

■ New sales manager of the Rotadrill division of Schramm, Inc., West Chester, Pa., is John R. Mills. He comes to the manufacturer of air compressors and air-drilling equipment with over ten years' experience in water-well and blast-hole drilling, including world-wide consulting work for government and private agencies.

IRF presents 1960 award

The O'Farrill Highway Award, given annually to the outstanding student in the International Road Federation's fellowship program, has been presented to Frederick Deighton, executive engineer of the British Guiana Public Works Department. He is one of the 42 foreign highway engineers from 29 countries who have just completed a year of graduate studies under the program.

Dravo elects officers

Louis A. Mertz has been elected senior vice president and Edward T. Fitch, financial vice president of Dravo Corp., Pittsburgh. The firm named Ivan L. Hillman treasurer and Joseph Newman controller.

To Keep Power Equipment Running To Stand Guard on the Job . . .

THE ANSWER IS Anthes

The WEATHERCAP®

Rain cannot get in a vertical exhaust protected by Weathercap. Range of sizes to fit 1" to 6⅜"O.D. Fully automatic OPENS at the first touch of exhaust pressure, CLOSES the instant the engine stops . . . Now standard equipment on over 35 nationally known names in tractors and powered equipment.

The FLAME-GUARD Construction Torch

New self-righting torch with an exclusive square-type burner which STAYS LIT in the worst weather . . . Burning time of 24 to 48 hours . . . Quality Anthes construction throughout.

Get the full answers and literature from

Anthes DIVISION

FORT MADISON, IOWA

For more facts, circle No. 367

Now! . . . Euclid Twin-Power

TS-14 all-wheel drive "Twin"

*heaped capacity at 3:1 is 16 yds., at 1:1 slope, 20 yds.

HERE'S BIG NEWS for scraper users. The many cost cutting advantages of all-wheel drive are now available in a medium-size scraper, the Euclid Model TS-14. With Twin-Power and a total of 296 h.p. this new "Euc" has already proved itself an outstanding performer. A one-man, one-machine earthmoving spread, it gets more work done at lower cost than any other scraper of comparable size . . . its high productive capacity brings a better return on investment.

Like the widely used 24 yd. "Twin", this new Euclid has a separate Torqmatic Drive and power train for each axle. It self-loads in practically any scraper material and with a pusher is a big producer on even the toughest jobs. There's plenty of power and traction to pick up a heaped load in a hurry . . . pull out of the cut fast . . . and highball on the haul and return.

The TS-14 works on grades and under adverse job conditions that stall other scrapers. Its ability to do a wide range of work — without pusher assistance — makes it the most versatile scraper in its class. This new "Twin" can lengthen your work season and give you a bidding advantage on that next job. Get the facts and figures from your Euclid dealer.

EUCLID Division of General Motors • Cleveland 17, Ohio

Check the advantages of all-wheel drive in this new 14 yd. Twin-Power scraper!

Engineering mechanics covered in new text

A new book, "Elementary Engineering Mechanics," designed for 2-year technician programs, is announced by John Wiley & Sons, Inc.

The textbook is divided into two parts, the first dealing with statics or stationary bodies, the second dealing with dynamics or moving bodies. The essential elements of both and their application to engineering problems are fully described. The author stresses fundamental concepts to show how even the most complicated mechanics problems can be solved by correct analysis.

The book uses a simplified approach to explain noncurrent, noncoplanar, nonparallel force systems; describes variable forces and variable acceleration that is divorced from calculus; provides a comprehensive description of static and kinetic friction; simplifies the analysis of truss problems; and stresses mechanical applications, as well as civil and structural problems.

The author of the new book is Eugene George Key, professor of engineering at East Los Angeles College.

Copies of the book, which is priced at $5.50, may be ordered from the publisher, 440 Park Ave. S., New York 16, N. Y.

INTO PLACE goes the first and heaviest girder for a pellet plant for Bethlehem Steel's Grace Mine, near Morgantown, Pa. The 22-ton girder, 62 feet long and 7½ feet deep, is part of the 5,800 tons of structural steel that Bethlehem is fabricating and erecting for the plant.

this 14 yd.* scraper!

TS-14 features that cut dirt moving costs

- 2 engines — 296 total h.p.
- all-wheel drive
- NoSpin differentials
- 2 Torqmatic Drives
- converter lock-up
- 20 yds. heaped (14 yds. struck)

All-wheel drive and 296 total horsepower enable the TS-14 to get heaped loads without pusher assistance... make it a one-man earthmoving spread with more versatility than any other scraper in its class. Low wide bowl and four-section cutting edge speed loading and cut cycle time... blade sections are identical, adjustable and reversible.

The TS-14 works independently of other equipment... in the cut and on the fill... has the power and traction to self-load fast and work under adverse grade and job conditions that stop single engine scrapers. Its versatility and work-ability make this new "Euc" a top performer for low cost dirt moving on any scraper job... big yardage projects as well as close quarter work where concentration of equipment isn't practical.

Separate Torqmatic Drives for each axle provide a smooth, steady flow of power. There's no clutching, no delay, and no loss of momentum when changing to any of the 4 forward speeds... speed changes are made by a simple flick of the wrist at the air assist remote control lever. Converter lock-up assures maximum efficiency on grades and long hauls... this direct drive provides more usable power from each engine.

GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

WE SELL OR RENT 65 DIFFERENT TYPES OF EASILY-ERECTED CONCRETE FORMS

Tell us your forming problem... We'll tell you how to handle it.

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Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 1

Tractor-loader—literature describing the Allis-Chalmers TL-14 tractor-loader. Contains information on the two transmissions available for the 83-hp unit, as well as a bucket selection chart and complete specifications. Catalog MS-1373.

Write to the Allis-Chalmers Mfg. Co., Construction Machinery Division, Dept. C&E, P. O. Box 512, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 11.

Wire rope—a 156-page illustrated catalog, "Wire Rope for Construction and Industrial Equipment." Contains specific recommendations for use of wire ropes on various types of construction machinery. Also includes basic wire-rope information and discusses special rope features, grades, constructions, lays, and cores. Detailed data on all standard Bethlehem ropes, as well as fittings for these ropes, is included in separate sections. Catalog 493.

Write to the Bethlehem Steel Co., Dept. C&E, 701 E. Third St., Bethlehem, Pa., or use the Request Card at page 18. Circle No. 87.

Masonry drilling—a catalog discussing new methods of drilling masonry or concrete, either with or without the reinforcing rods, together with the equipment used in these drilling processes. Illustrated descriptions of dry dustless drilling and wet drilling to any depth, with holes up to 14 inches in diameter.

Write to the New England Carbide Tool Co., Inc., Dept. C&E, 53 Commercial St., Medford 55, Mass., or use the Request Card at page 18. Circle No. 72.

Loaders, backhoes, others—a well illustrated booklet on Ford loaders, backhoes, dozers, fork-lifts, cranes, and other equipment in use with Ford tractors. Applications described include heavy and light excavating; heavy and light loading; scraping, leveling, and grading; as well as lifting, towing, and general utility.

Write to the Ford Motor Co., Tractor & Implement Division, Dept. C&E, 2500 E. Maple Road, Birmingham, Mich., or use the Request Card at page 18. Circle No. 112.

Truck, floor cranes—a folder giving complete specifications of all sizes and types of H. S. Watson cranes from 500 to 4,000-pound capacities for truck and shop floor use. Also discusses and illustrates a line of hand-operated winches with capacities from 500 to 2,000 pounds. Lighter winching may not always warrant outlay for power, whether it be electric or from the truck engine. Catalog W-102.

Write to the H. S. Watson Co., Dept. C&E, 1316 67th St., Emeryville 8, Calif., or use the Request Card at page 18. Circle No. 106.

Steel forms—a bulletin on the complete line of Rex curb, combination curb and gutter, sidewalk, and flexible steel forms. Carries suggested specifications and furnishes information on the firm's road and airport forms. Bulletin 60–163.

Write the Chain Belt Co., Dept. C&E, 4701 W. Greenfield Ave., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 101.

Pile-hammer lubrication—an illustrated fact sheet covering the McKiernan-Terry Dualtube lubrication system. Describes the equipment and method by which lubricating oil is fed, accurately and continuously, to a pile hammer without passing through the air or steam hose.

Write to McKiernan-Terry Corp., Dept. C&E, 100 Richards Ave., Dover, N. J., or use the Request Card at page 18. Circle No. 69.

Concrete finisher—a fact sheet on the Dart Viking Model V-3 "3-in-1" concrete finisher. Describes how the unit operates as a 35-inch float and finisher, 44-inch float and finisher, and planetary grinder. Photographs and specifications.

Write to the Dart Mfg. Co., Dept. C&E, 1002 S. Jason St., Denver 23, Colo., or use the Request Card at page 18. Circle No. 80.

Concrete air meter—a folder on the Protex meter for checking the per cent of air content in both lightweight and regular concrete. Lists ten major features of this unit and gives brief data on both standard and optional equipment. Illustrated with photographs. Also includes information on other Protex products.

Write to the Autolene Lubricants Co., Industrial and Research Division, Dept. C&E, 1331 W. Evans Ave., Denver 9, Colo., or use the Request Card at page 18. Circle No. 50.

Hard-to-reach places are easy for the powerful Viberette in prestress work in narrow forms

...Gasoline-powered Model VG shown—drives and heads interchangeable with electric-powered Model VE.

THE PERFECT SOLUTION for concrete compaction in restricted areas is a Viberette Vibrator with small diameter flexible drive and head with replaceable rubber or steel tip.

The 12,000 rpm speed and low amplitude of Viberette produces extremely effective vibration in consolidating low slump concrete—in narrow construction forms, narrow stems of prestress T-sections and other hard-to-reach places.

Easy portability and one-man operation keep labor costs to a minimum.

WRITE TODAY for full information!

Advantages

Powerful, 4-cycle, air-cooled, 3 HP gasoline engine. Modern no-slip timing belt drive.
Interchangeable heads—1", 1 1/16" and 1 3/4" diameter.
Replaceable rubber or steel tips on 1 1/16" and 1 3/4" heads.
Flexible drive lengths—10' to 20'.
Quick release drive connection.

Viber Company, 726 South Flower Street Burbank 32, California

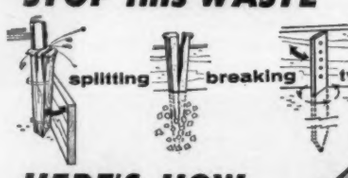
VIBER CO. VIBRATORS

Pioneers and leaders in the manufacture of vibrators.

For more facts, use Request Card at page 18 and circle No. 370

STEEL STAKES by dee

STOP this WASTE



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100 or more used
Set up 10 times faster
Strip 20 times faster

HOLDS SOLIDLY
DRIVES RAPIDLY . . .
regardless of rotation or subgrade

dee Concrete Products Co.
Licensed Manufacturer
670 N. Michigan Ave., Chicago 11, ILL.

For more facts, use Request Card at page 18 and circle No. 371

Product Literature—For job efficiency and economy make sure you have this product information

Arc-welding electrodes—a handy pocket-size card giving application information on all mild-steel arc-welding electrodes. Explains how to identify them according to American Welding Society—American Society for Testing Metals classification.

Write to Hobart Bros. Co., Dept. C&E, Hobart Square, Box 8129, Troy, Ohio, or use the Request Card at page 18. Circle No. 89.

Shoring frames—a bulletin on Patent Scaffolding's new 20K heavy-duty shoring frames, which are capable of sustaining loads up to 10,000 pounds on each leg. Gives details on the interchangeability of specially designed U-heads, sprockets, adjustable legs, and base plates. Bulletin PSS-51.

Write to The Patent Scaffolding Co., Inc., Dept. C&E, 38-21 12th St., Long Island City 1, N. Y., or use the Request Card at page 18. Circle No. 95.

Crusher—a bulletin describing the Pennsylvania Hercules single-roll crusher for heavy-duty primary or secondary crushing of a variety of materials. Shows the distinctive features of the new crusher, describes its operation and applications, and gives all dimensions and capacities. Bulletin 2020.

Write to the Bath Iron Works Corp., Pennsylvania Crusher Division, Dept. C&E, 325 S. Matlock St., West Chester, Pa., or use the Request Card at page 18. Circle No. 13.

Hand tools—a catalog illustrating and describing in detail a wide variety of Owatonna hand tools, including OTC wrenches, pliers, cutters, screw drivers, punches, chisels, sockets, handles, and extensions. Socket sets, tool sets, tool chests, feeler gages, and other miscellaneous tools are also covered. Catalog No. H-9.

Write to the Owatonna Tool Co., Dept. C&E, 381 Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 5.

Steel forms—a folder on Watco steel forms—single-tee, single-tee roll-away, fixed-tee, and hinge-tee. Illustrations include on-the-job photographs.

Write to Watco Steel Forms, division of Plant City Steel Corp., Dept. C&E, P. O. Box 1308, Plant City, Fla., or use the Request Card at page 18. Circle No. 96.

Belt-conveyor idlers—a catalog on idlers for Barber-Greene belt conveyors. Thoroughly covers idler application, and describes and illustrates the more than 800 units in the firm's line. Features of four different series, designed to match a variety of jobs and conditions, are discussed, and complete specifications and weights for each unit are listed.

Write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 12.

Post-tensioning—literature discussing tendon and anchorage assemblies, stressing and grouting equipment, and field labor procedures for cast-in-place and precast post-tensioned concrete construction. Also includes data on force development calculations, as well as on detailing and placement plans. Detail drawings illustrate text. Bulletin No. 70-6.

Write to Joseph T. Ryerson & Son, Inc., Dept. C&E, P. O. Box 8000-A, Chicago 80, Ill., or use the Request Card at page 18. Circle No. 25.

Dump bodies—a folder illustrating and describing a full range of Daybrook aluminum dump bodies and matched underbody and telescopic hydraulic hoists for single and tandem-axle trucks, trailers, and dump trains. Form No. HB-6001.

Write to the Daybrook Hydraulic Division, Young Spring & Wire Corp., Dept. C&E, 500 Lehman Ave., Bowling Green, Ohio, or use the Request Card at page 18. Circle No. 10.

Heavy-duty drill—a bulletin on the Gardner-Denver Mole-Dril Model AM5A. States the literature, this "down-the-hole" drill has a 5-inch diameter and is 41 inches long with bit attached. Bulletin 6-6gg.

Write to the Gardner-Denver Co., Dept. C&E, S. Front St., Quincy, Ill., or use the Request Card at page 18. Circle No. 92.

Steel weight tables—a 72-page booklet containing useful weight tables of steel. Covers weights of round, square, hexagonal, octagonal, and flat steel bars. Decimal equivalents, tables of area and circumferences of circles, and other formulas listed.

Write to Jos. Dyson & Sons, Inc., Dept. C&E, 5125 St. Clair Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 111.

Epoxy compounds—data on the applications of Sika epoxy compounds for bonding, patching, and for resurfacing of pavements. Also gives information on joint and crack sealants, and surface coatings for concrete. Bulletin SEC-759.

Write to the Sika Chemical Corp., Dept. C&E, 35 Gregory Ave., Passaic, N. J., or use the Request Card at page 18. Circle No. 26.

Crane-excavator—a bulletin covering Thew-Lorain's 47-ton Model 820A, which may be equipped as a 2-yard shovel or as a crane, dragline, clamshell, or hoe. Gives details of design and construction, and is well illustrated with photos including close-ups of major components. Bulletin 820A, Form No. 36753-0.

Write to The Thew Shovel Co., Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 8.

Throttle valves—a bulletin illustrating and describing the Le-Hi Series 2500 throttle valves for the safe control of compressed air on pneumatic operating equipment. Bulletin No. 460.

Write to the Hose Accessories Co., Dept. C&E, 2720 N. 17th St., Philadelphia 32, Pa., or use the Request Card at page 18. Circle No. 131.

Coupled rock-drill steels—a brochure entitled "Drilling Rock With Coupled Steels." Discusses and illustrates correct rotation, drill, and feed-control operations; starting a hole; proper feed, drilling, and lubrication practices; adding and removing steels; bit maintenance; and dust control. Bulletin No. 10815.

Write to the Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, Ill., or use the Request Card at page 18. Circle No. 126.

(*Continued on next page*)

'Life Guard' Hats & Caps

The best in head protection for electrical/construction workers

Jackson's 'Life Guard' safety hats and caps safely resist over 20,000 volts, and they also provide impact resistance to more than satisfy federal requirements for safeguarding construction workers.

'Life Guard' safety caps have narrow brim around sides and back, visor in front. Injection molded plastic is strong yet flexible, has a soft comfortable feel. Caps may be ordered with attached welding helmets, goggles, and assorted face shields.

Standardize on this all-purpose safety hat for maximum head protection. Identify work categories by issuing these different hat colors: white, yellow, grey, and orange.

'Life Guard' safety hats offer neck protection with wide brim all around. The 'Life Guard' headgear is instantly adjustable in hat sizes, and its comfort keeps the hat where it does its job, on the worker's head. Chin straps and warm winterizers are available.

Sold by better welding supply and safety product dealers everywhere

Jackson Products

31739 Mound Road, Warren, Michigan

For more facts, use Request Card at page 18 and circle No. 372

Philip Beauchamp recently started business for himself, general contracting in Reading, Massachusetts

"I BOUGHT THIS D6 USED. IT'S MAKING MONEY FOR ME!"

When a man goes into business for himself, he can't afford to take chances on his first machine, can he? As an operator, Philip Beauchamp was sold on Cat-built rigs, so he dropped in to see his Caterpillar Dealer. There he met a salesman who helped him with some friendly advice and showed him a fairly priced used "Bonded Buy" D6.

Actually, beyond his experience with Caterpillar equipment, the "Bonded Buy" guarantee influenced his decision. This is the safest buy in used equipment you can make anywhere. Exclusive on reconditioned Cat-built machines, it is a bonded guarantee—up to $10,000—of satisfactory machine performance and on *all* parts and labor during the guarantee period. Your Caterpillar Dealer, with his large selection of used equipment, also offers you two other types of protection—a "Certified Buy" and a "Buy and Try" deal on used units of any make.

Whether you're just beginning, middle size or a big contractor, you'll find as Philip Beauchamp did, you get your money's worth from your Caterpillar Dealer. He has a wide selection of reconditioned, classified and guaranteed trade-ins at fair, reasonable prices. He's interested in *your* needs and *your* problems and backs you with prompt service and parts you can trust. Don't buy "blind." See him —he's listed in the Yellow Pages.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

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BEST BUYS IN NEW AND USED EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 373

Calculator—a pocket-size calculator for concrete products, designed to furnish instant conversion data from total load to psi on 17 standard test specimens and masonry units.

For further information write to Forney's Inc., Dept. C&E, Box 310, New Castle, Pa., or use the Request Card at page 18. Circle No. 27.

Wire rope—a handbook on abuses and correct uses of wire rope and slings. Illustrated with cartoons.

Write to the Union Wire Rope Corp., Dept. C&E, 2260 Manchester Ave., Kansas City 26, Mo., or use the Request Card at page 18. Circle No. 71.

Soil sampling, coring equipment—well illustrated literature showing and describing Giddings equipment for shallow-hole boring and sampling requirements. Covers design and operating features of this hydraulic equipment, as well as types of mountings and accessories.

Write to the Giddings Machine Co., Dept. C&E, 401 Pine St., Fort Collins, Colo., or use the Request Card at page 18. Circle No. 104.

Hammermills—a bulletin describing the features of Universal Hammermasters. Complete with illustrations and specifications. Bulletin No. 307.

Write to the Universal Engineering Corp., Dept. C&E, 620 C Ave. N.W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 45.

Material-handling, other equipment—a condensed catalog giving data on Syntron vibratory material-handling equipment, vibrating parts handling equipment, power rectification equipment, and portable power tools. Illustrated, the 68-page catalog presents descriptions and specifications on all Syntron products. Catalog 605.

Write to Syntron Co., Dept. C&E, 227 Lexington Ave., Homer City, Pa., or use the Request Card at page 18. Circle No. 67.

Ephemeris—the Gurley ephemeris for 1960. Charts showing northern, southern, and equatorial stars are keyed to tables in the booklet. Also lists 28 selected stars for determining stellar observations, and gives complete instructions for computing azimuths.

Write to W. & L. E. Gurley, Dept. C&E, 518 Fulton St., Troy, N. Y., or use the Request Card at page 18. Circle No. 24.

Joist, beam hangers—a booklet presenting design and use information on Teco-U-Grip joist and beam hangers. In addition to providing recommended safe working values, the booklet also illustrates applications where the Teco hangers can be used for economical wood-frame construction.

Write to the Timber Engineering Co., Dept. C&E, 1319 18th St. N. W., Washington 6, D. C., or use the Request Card at page 18. Circle No. 51.

Hoists—a folder on Daybrook hoists. Telescopic hoists are featured for tandem and single-axle trucks, trailers, and trains; also underbody hoists for medium, extra-medium, heavy, and extra-heavy-duty work. Load-rating charts for every hoist model are explained. Form No. HD-6002.

Write to the Daybrook Hydraulic Division, Young Spring & Wire Corp., Dept. C&E, 500 Lehman Ave., Bowling Green, Ohio, or use the Request Card at page 18. Circle No. 132.

Symbols for welding—revised guide for welded construction. Includes recent revisions in standard American Welding Society symbols. Helpful charts, illustrations. Bulletin 1100.1.

Write to The Lincoln Electric Co., Dept. C&E, P. O. Box 3115, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 23.

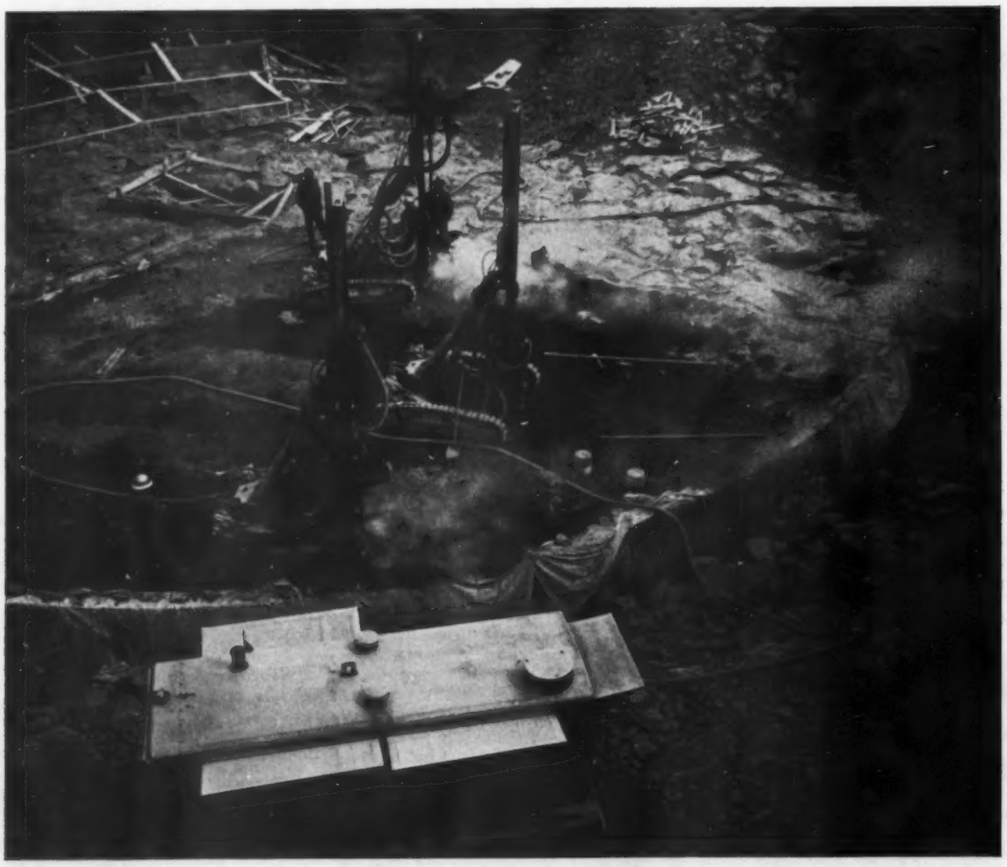
Sealant—an application bulletin with specifications for sealing cracks in asphalt and concrete pavements with Lastek 33 rubberized liquid, which can be poured into cracks without heating or special equipment. Table shows the amount of material required for each 100 linear feet of cracks. Index No. LC-160.

Write to Maintenance, Inc., Dept. C&E, W. Liberty St. Extension, Wooster, Ohio, or use the Request Card at page 18. Circle No. 4.

Trencher—a folder on the small, compact Cleveland Model 92 trencher. Photographs illustrate text; complete dimensions and specifications included. Bulletin L-108.

Write to The Cleveland Trencher Co., Dept. C&E, 20100 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 121.

Subsurface soil inventory—a manual detailing procedures for using the Barnes layer method to determine an exact inventory of subsurface soils by quantity, quality, and location. The Barnes method utilizes



Building underground silo to house the 90' Titan, contractors at Moses Lake, Washington, use Gardner-Denver air compressors and rock drills to speed hard-rock drilling

Rocky roost for the Titan Ballistic Missile

THE PROJECT

Underground launching base for the Titan ICBM at Larsen Air Force Base, Moses Lake, Washington. Putting muscle into America's missile program is a fast-paced, precision project. To help meet rigid construction schedules, Gardner-Denver air power and rock drills speed blast-hole drilling for the removal of huge tonnages of hard rock. To help meet demanding specifications of the Titan base construction, Gardner-Denver equipment drills precision holes deep into solid rock.

GARDNER-DENVER EQUIPMENT ON THE JOB

3 ATD3000 "Air Tracs"® equipped with DH143 rock drills —for drilling 4½", 5" and 6" anchor bolt holes to depths of 27'.

2 ATD3000 "Air Tracs" equipped with DH123 rock drills— for drilling 10' rounds in the shafts.

Air power supplied by Gardner-Denver RP900 and RP600 rotary portable compressors.

THE CONTRACTORS

MacDonald Scott and Associates, prime contractor.
Murphy Bros. Construction, subcontractor.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

For more facts, use Request Card at page 18 and circle No. 374

DRY

DRY

– that's the word for dewatering by

GRIFFIN

WELLPOINT CORP.

SALES • RENTAL • CONTRACT

For more facts, circle No. 373

conductance of the earth, as measured by the Michimho-Vibrotester Model 274-M portable electrical instrument. Manual E-63.

Write to Associated Research, Inc., Dept. C&E, 3777 W. Belmont Ave., Chicago 18, Ill., or use the Request Card at page 18. Circle No. 103.

Pneumatic-tire roller—an illustrated fact sheet on the Western Model 12-SP 12-ton pneumatic-tire roller. Lists such features as torque converter, reverse shuttle, power steering, double braking, and oscillating wheels. Specifications.

Write to the Douglas Motors Corp., Western Equipment Division, Dept. C&E, 1234 N. 62nd St., Milwaukee 13, Wis., or use the Request Card at page 18. Circle No. 81.

Fir plywood—literature giving information on fir plywood standard grades and specialty products. Text illustrated with tables, photographs, and drawings. Form No. S-60.

Write to the Douglas Fir Plywood Assn., Dept. C&E, 1119 A St., Tacoma 2, Wash., or use the Request Card at page 18. Circle No. 28.

Masonry anchors—a wall chart with dimensions and other data for each masonry anchoring job. Illustrates the principal types of Rawlplug masonry anchors and drills, and indicates at a glance where each should be used. Specifications included. Accessories are also shown in the literature.

Write to The Rawlplug Co., Inc., Dept. C&E, 248 Petersville Road, New Rochelle, N. Y., or use the Request Card at page 18. Circle No. 34.

Loader—a bulletin on the Anderson Power-Crowd loader that scoops dirt while the tractor remains stationary. Illustrates how the heavy-duty cylinders push the bucket into the pile for a full ¾-yard load and raise it aloft by lift cylinders.

Write to A. C. Anderson, Inc., Dept. C&E, Dept. 719, P. O. Box 391, Wildwood, N. J., or use the Request Card at page 18. Circle No. 70.

Telescoping floor crane—data on the new Thern Model HC58A Hydro-3 portable floor crane with telescoping mast and boom. According to the literature, the 3-position arrangement provides a wide range of reach and lifting and moving possibilities.

Write to the Thern Machine Co., Dept. C&E, 3760 W. Fourth St., Winona, Minn., or use the Request Card at page 18. Circle No. 77.

Welding reinforcing bars—information on Thermit welding of reinforcing steel for heavy concrete construction. Welding procedures are illustrated and explained in detail.

Write to Thermex Metallurgical, Inc., Dept. C&E, Lakehurst, N. J., or use the Request Card at page 18. Circle No. 107.

Lubricant—a technical bulletin describing a new semifluid extreme-pressure lubricant called Sun Prestige 740A-EP. Discusses characteristics, uses, and typical specification data, pointing out that the lubricant can be used in small-line centralized lubrication systems where stiff greases are unsuitable.

Write to the Sun Oil Co., Industrial Products Dept., Dept. C&E, 1608 Walnut St., Philadelphia 3, Pa., or use the Request Card at page 18. Circle No. 108.

Crane-excavator—a brochure on the Little Giant Model 32 heavy-duty 12½-ton crane-excavator. Clutches, cable drums, and swing drums are illustrated, and a large schematic line drawing shows the direct power train.

Write to Little Giant Crane & Shovel, Inc., Dept. C&E, E. 16th and Howard Drive, Des Moines 13, Iowa, or use the Request Card at page 18. Circle No. 65.

Transistorized megaphone—a brochure describing the Holmin transistorized "Voice Gun." Illustrations include a cutaway section of the 3¼-pound unit, detailing such parts as the microphone, transistor amplifier, speaker, and power supply. Complete specifications are listed.

Write to the Wm. A. Holmin Corp., Dept. C&E, 1212 11th St., Rockford, Ill., or use the Request Card at page 18. Circle No. 105.

The Arizona Highway Department plans to do some $53 million worth of construction in fiscal 1960–61.

Stone & Webster elects

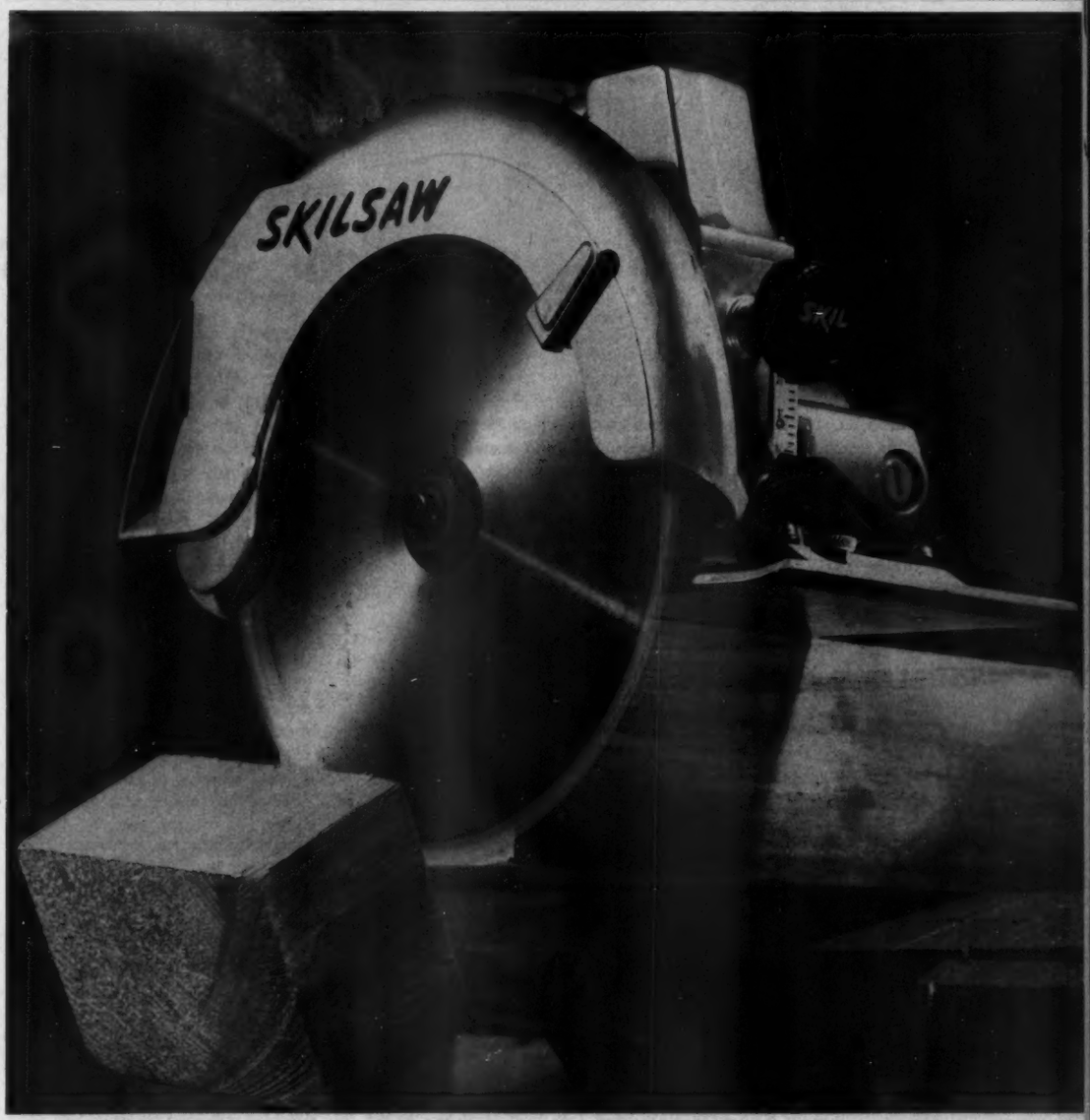
Stone & Webster Engineering Corp., Boston, Mass., has elected two new vice presidents: Theodore E. Casselman, Jr., manager of the New York office, and Wilbur S. Roberts, Jr., manager of new business activities.

Flexforms joins Prescon

■ Flexforms, Inc., has become affiliated with The Prescon Corp., Corpus Christi, Texas. Flexforms was the originator of Flex-Tee, a prestressed single-stem pitched-roof deck member, on which patents are pending. Prescon produces tendons used in post-tensioned prestressed-concrete structures.

Reo Division names

■ The Reo Division of The White Motor Co., Lansing, Mich., has named E. H. Scheiwe regional manager. He will work with the field distribution organization, representing the factory on matters such as sales, financing, and deliveries.



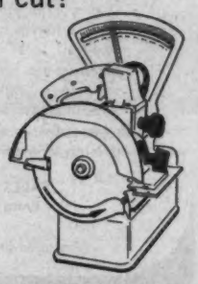
New! Biggest capacity 10" saw made

SKILSAW Super Duty Model has full 3¾" depth of cut!

If you don't think there's a big difference in saw capacities, try cutting 4-inch dressed lumber with any other 10-inch saw. The 860, with full 3¾-inch depth of cut, does it with blade to spare.

This super-duty, high speed saw is not only rugged as they come, it's the lightest 10" saw made. Super safe, too, because of Skil's "Floating" Guards*. Both lower and upper guard automatically adjust to cover blade at every cutting depth. Vari-torque clutch protects against kickbacks.

Ask your Skil distributor for a demonstration. Look under "Tools-Electric" in the Yellow Pages. Or write: Skil Corporation, 5033 Elston Avenue, Chicago 30, Illinois, Dept. 107H.



25% lighter—only 17½ lbs.

*Patent applied for

SKIL ...and SKILSAW POWER TOOLS

For more facts, use Request Card at page 18 and circle No. 376

The big earthmover on the Navajo Dam project in New Mexico is a Bucyrus-Erie 450 walking dragline that uses a 17-yard bucket to load a traveling hopper with material for the earth and rock-fill dam. The hopper, made by The Conveyor Co., allows the dragline to work continually without waiting for "Eucs." Rigs are loaded from the hopper in 20 seconds or less. A tractor moves the hopper, which is on crawler tracks.

Dragline and mobile hopper in smooth loading operation

Hopper allows earthmover to work without delays; haul rigs loaded with less impact in 15 to 20 seco

Construction operations at Navajo Dam, located on a sweeping curve of the San Juan River about 30 miles east of Farmington, N. Mex., are planned around some special large machines. Probably the biggest of these is a Bucyrus-Erie 450 walking dragline.

This veteran of the Kentucky coal fields and the St. Lawrence Seaway loads much of the pervious random material for zones 2 and 3 of the dam with its 17-yard bucket.

Use of the large Monighan for loading the Euclid bottom-dumps was carefully planned. A 65-yard mobile hopper, built by The Conveyor Co. of Los Angeles, is used with the dragline. The hopper is mounted on Athey crawler tracks and is moved about by a service tractor.

Under ideal conditions, the Monighan, working from a bench above the level on which the hopper stands, digs, swings, and dumps with a minimum of hoisting. The hopper permits smooth, continuous operation, with never a delay waiting for haul units. The hopper also loads the "Eucs" faster (usually in 15 to 20 seconds), more uniformly, and with less impact than the dragline.

More big machines

Another large unit being used by the contractor—a joint venture of Morrison-Knudsen Co., Inc., Boise, Idaho; P & S Construction Co., Butte, Mont.; and Henry J. Kaiser Co., Oakland, Calif.—includes a Ferguson self-propelled Model SP96M sheepsfoot roller, with four drums driven by four GM diesel engines with Allison torque converters. This rig handles the compaction of the zone 1 or impervious core section. Zones 2 and 3 are compacted by Essick vibratory rollers towed in tandem by an Allis-Chalmers HD-21 tractor. Each of these rollers is 48 inches in diameter and 6 feet long, and is powered by a Continental engine.

While they are smaller in comparison, such units as the Euclid TSS-24 scrapers and TC-12 tractors are still big equipment.

One problem with the big machines is that when one is down for repairs, a large segment of the operation is affected. To minimize these effects, the joint venture has most of the large machines backed up by reserves. A Peterson double gang-tandem sheepsfoot roller (four drums) stands by to back up the big self-propelled sheepsfoot. A spare Essick vibratory roller permits this operation to continue at full rate with one roller down for repairs. Five of the Euclid 4-wheel tractors can be quickly converted to either the scraper or bottom-dump attachments as the demand for one or the other changes.

Another safeguard against downtime is the maintenance setup at the dam: a portable field shop takes care of minor repairs in the field, leaving the main shop free to concentrate on major work. (See "Field Shop Promotes Main-Shop Efficiency," C&E,

DELMAG

LOW-COST OPERATION

DIESEL PILE HAMMERS

DELMAG Diesel Pile Hammers are light in weight yet develop tremendous energy per blow and have proven outstandingly successful under all weather conditions.

Requiring no costly "extras", DELMAG Diesel Pile Hammers are completely self-contained and weigh approximately one-half that of steam hammers of comparable energy rating. This results in a big saving on the size of handling equipment required and makes for a much more mobile pile driving operation.

SALES AND SERVICE
From Coast to Coast

Illustrated literature sent on request

THREE MODELS AVAILABLE:

D-5
9,100 ft. lbs.

D-12
22,500 ft. lbs.

D-22
39,700 ft. lbs.

The Foundation Equipment Corp., 100 Elizabeth St., Newmarket, Ont. — Marlo Machinery Co., 988 Market St., San Francisco 2, Calif. — Andrews Machinery of Washington Inc., 3632 East Marginal Way, Seattle 4, Wash. — Special Construction Machines, Ltd., 166 Bentworth Ave., Toronto 19, Ont.

For more facts, use Request Card at page 18 and circle No. 378

LESCHEN WIRE PORTER ROPE DIVISION
H. K. PORTER COMPANY, INC.

For more facts, circle No. 379

Whenever the Monighan has to work in areas where the hopper would bog down, the "Eucs" are loaded directly with the dragline bucket. A portable bang board is used to cut down on the amount of spillage.

Contractors & Engineers staff article

June, 1960, page 138.) A central service station is also located in the field for once-per-shift servicing of all rigs.

Alternates

The Monighan and hopper operation is kept going whenever possible. But when borrow-pit conditions do not permit this ideal arrangement to be used, the contractor switches to an alternate loading method.

In some cases, when the material is so unstable that the hopper bogs down, the dragline loads the "Eucs" directly with the aid of a bang board to minimize spillage. The impact of the 17-yard load of wet gravel takes a heavy toll of the bottom-dump closing cables.

In the normal operation, the scrapers, sideboarded to a capacity of 27 yards, take the top material from the borrow areas for use in the imper-

(Continued on next page)

Three Essick vibratory compactors pulled by an HD-21 work over the material in the embankment, while a second HD-21 dozes and scarifies the surface. Culverts, background, carry the river under a haul road.

A Euclid TSS-24 twin-engine scraper loads material for the impervious core of the dam with the aid of two Euclid TC-12 push tractors.

Need HOSE in a *HURRY?*

Suction • Water • Steam
Air • Multi-Purpose
Discharge • Pile Driver

Wherever your job is—*whenever* you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—*when* and *where* you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call Continental. You'll like the fast service and dependable quality you get from these warehouses:

BALTIMORE, Md. CLEVELAND, Ohio
BOSTON, Mass. DETROIT, Mich.
CHICAGO, Ill. MEMPHIS, Tenn.
PHILADELPHIA, Pa.
ST. LOUIS, Mo.

FIND US FAST IN THE YELLOW PAGES

CONTINENTAL SUPER-HIGHWAY HOSE
This hard working, high-pressure water hose has top grade rubber tube wrapped with frictioned duck thoroughly bonded to tube and cover. Red rubber cover resists abrasion, cutting, gouging. Sizes: 1¼", 1½", 2", 2½", 3", 3½", 4". Ask for latest catalog showing full line of CONTRACTORS HOSE, HOSE FITTINGS, BOOTS and CLOTHING.

HOSE by CR CONTINENTAL

CONTINENTAL RUBBER WORKS • 1989 LIBERTY ST. • ERIE 6, PENNSYLVANIA

For more facts, use Request Card at page 18 and circle No. 380

POWER TROWELS 6 models: 2 Hydro-Trowels, 4 manually-adjusted . . . for velvet smooth floor finishes.

COMPACTOR FLOATS 3 Compaction Control models . . . improve wear resistance and reduce installation costs of floors.

POWER TAMPERS 3 self-propelled models, 2700 impacts/min., to pack down earth backfill and finish blacktop.

POWER BUGGIES 10 Cu. Ft. capacity with hydraulic dump and dual-traction differential.

SPACE HEATERS 8 models: 75,000 to 450,000 B.t.u./Hr.—HEAT-ON-WHEELS.

KELLEY MACHINE DIVISION
285 Chicago Street Buffalo 4, New York

Please send me information on Kelley:

Name _____
Address _____
City _____
State _____

For more facts, use coupon or Request Card at page 18 and circle No. 381

A new Allis-Chalmers HD-21—almost unrecognizable because of mud and dirt—is working with the Monighan in an unstable area. Service crews are working on the rig. Field servicing and repair are important in keeping the job going.

This Bucyrus-Erie 71-B shovel with 3½-yard dipper is one of several working on the dam. It is loading material from the left abutment into one of the Euclid 17-yard end-dumps.

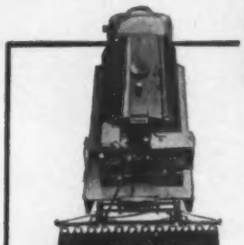
(*Continued from preceding page*)

vious zone of the dam. The TSS-24 scrapers are usually push-loaded by a pair of Euclid TC-12 tractors. The Monighan then moves in and takes the coarser materials from the deeper strata for the outer zones of the structure.

A wide variation in the depths of the several types of materials in the borrow areas keeps the job in a constant state of flux. Supervisory personnel must always have a ready alternate for almost every operation so that a quick switch can be made to compensate for the material changes.

In spite of the many job problems, the big machines are producing up to expectations, and the job is ahead of schedule. Based on progress to date, it is reasonable to anticipate that the dam will be completed well ahead of the March, 1963, scheduled date.

Navajo Dam, being built for the



ROSCO'S PRESSURE METERING MAKES THE DIFFERENCE AT ANY WIDTH!

Do you know . . .

that it's possible to apply bitumen through any length of spraybar from 1 to 24 feet *without changing the pressure and without any application adjustment?* It can be done with a Rosco! You would normally expect surges or drops in pressure to occur when sections of a distributor's spraybar are shut-off or turned on.

But . . .

NOT with a Rosco Distributor equipped with exclusive Pressure Metering. Even when as much as 23 feet of a 24-foot spraybar are shut-off, the precise, accurate delivery remains unaffected . . . the pressure in the working one foot stays the same as it was pre-set at the beginning of the run. The accurate delivery from the working nozzles is not affected . . . no matter how many feet of the bar are cut out.

No adjustments in truck or pump speed are required—in fact, with Pressure Metering the pump speed never changes and normal wear of the pump never affects the accuracy of the application. When any part of the spraybar is shut off, the excess material is automatically by-passed. Pressure at the operating nozzles stays the same. When additional nozzles are turned on, pressure is immediately available to supply them.

One control sets the pressure specified for the job. After that, pressure control is automatic . . . the operator can concentrate full attention to spotting the material properly on the road. Pressure Metering is an integral part of Rosco's patented Master Valve that permits one-lever control of all normal distributor functions. You'll find that Rosco's Pressure Metering is faster and more accurate —factors which can be the difference between a "make" or "break" job in today's highly competitive field. And Rosco's Pressure Metering assures you of jobs that will always meet rigid application specifications.

Let your Rosco dealer show you how Pressure Metering will pay off for you. Or write the factory for descriptive literature with specifications on Pressure Metering-equipped Distributors.

ROSCO BITUMINOUS DISTRIBUTOR with Pressure Metering. Front or rear mounted for truck or trailer.

ROSCO MINNEAPOLIS

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DISTRIBUTORS • MAINTAINERS • BROOMS
SUPPLY TANKS • TAR KETTLES • STREET FLUSHERS

For more facts, use Request Card at page 18 and circle No. 382

Save Up To One Third On Wire Tying Costs

"On-the-job" comparison tests have proved the Ideal Tie Wire Reel can save up to 33 per cent in wire, and speed tying by 25 to 30 per cent. That's why so many contractors have switched to the "Ideal" method for all their wire tying applications.

In addition, Ideal Reels protect the user, reduce fatigue, lighten the work-load, eliminate hazards caused by old-fashioned shoulder coils, and help cut man-hours lost due to accidents.

The Ideal Reel is extremely versatile . . . right or left hand use . . . loads four times faster than any other reel . . . patented knob rewinds unused wire . . . eliminates loose wire ends, kinking, and tangling . . . handles 11-20 gauge wire in Black Annealed, Monel, Galvanized Soft, Stainless Steel, Copperply, and Aluminum.

Get the profit facts from your dealer or write for full information today!

IDEAL TIE WIRE REELS

Ideal Reel Company • 1424 Madison St. • Paducah, Kentucky

For more facts, use Request Card at page 18 and circle No. 383

U. S. Bureau of Reclamation under a $22,822,644 contract, is about 80 miles east of the Four Corners, where the states of Colorado, New Mexico, Arizona, and Utah meet. The 26,300,000-yard earth and rock-fill structure will rise 338 feet above the riverbed and will have a crest length of 3,700 feet.

The structure is one of the four principal elements of the Upper Colorado River Storage Project. It will be operated in conjunction with Glen Canyon Dam, Flaming Gorge Dam, and the Curecanti Storage Unit to help conserve and distribute Colorado River water over the upper and lower basin states.

In this sparsely settled area, a considerable distance from established communities, manpower and the well-being of the employees are major considerations for the project management. Most of the 500 to 600 employees are local New Mexico and Colorado people. The supervisory personnel and some specialists, such as mechanics and tunnel men, moved in with the job.

To accommodate the families that must live near the job, the contractor set up a 160-acre trailer court complete with water, sewer, and electric service. A central utility building supplies laundry facilities, toilets, and showers. However, no "dry" trailers are permitted. The 88 children who reside in the camp are transported by bus to schools in Blanco and Bloomfield. An old school building on the site is used for dances and other recreational activities.

A 56-man barracks and a mess hall provide living facilities for single men. There are usually about 50 men in residence.

All of the supervisory personnel live at the job site, since their duties demand their presence 12 to 20 hours a day.

The joint venture is sponsored by Morrison-Knudsen, and the job gets general supervision from M-K's Los Angeles district office. B. L. Perkins is general superintendent of the Los Angeles District. The project supervisory staff is headed by project manager H. D. Gard and includes general superintendent Marvin Moore, project engineer Max L. Daley, office manager P. A. Campbell, and office engineer J. A. Cooney.

The supervisory staff for the Bureau of Reclamation includes W. W. Brenner, project construction engineer; E. D. Henry, field engineer; J. D. Seery, office engineer; and George Harvey, administrative officer. This staff reports directly to regional director F. M. Clinton at the Salt Lake City headquarters of the bureau's Region 4. THE END

Reserve items of equipment help plug holes in spreads and prevent downtime. The Peterson double gang-tandem sheepsfoot rollers pulled by the Allis-Chalmers HD-21 are substituting for the big Ferguson sheepsfoot that is down for repairs at this time. A TSS-24 unloads on the fill, background.

LOADING POWER
means production power!

Production power means time and money saved. Rockford Spring Loaded Clutches are the perfect, controlled power-link between engine and work. These heavy duty clutches are used on many loaders, graders, and off-the-road trucks. Next time specify Rockford. Many sizes and types of clutches and power take-offs are available. Write today for complete details.

15" RT
SPRING LOADED
ROCKFORD CLUTCH

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Borg-Warner International
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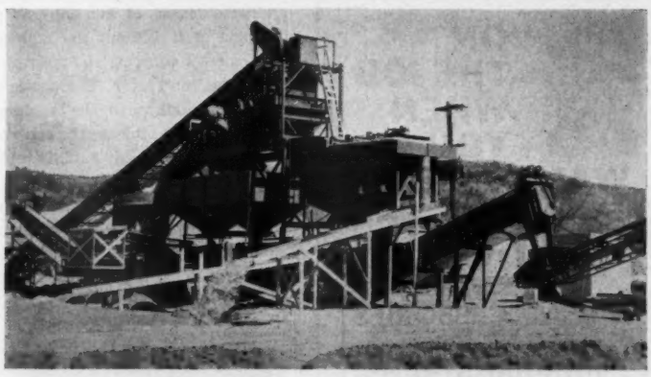
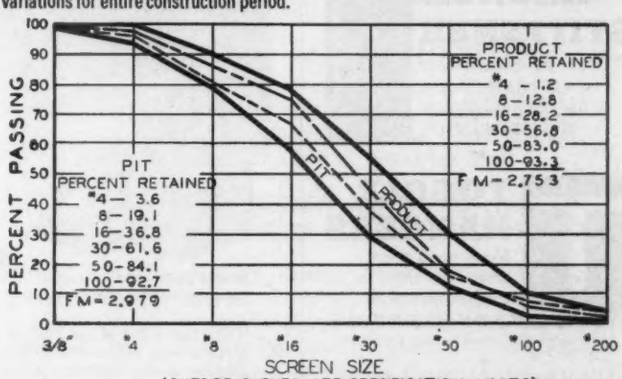


Tough Specs Aren't Tough with an
EAGLE SAND WASHING SECTION
on the job!

The experience of Savin Brothers, Inc. on Townshend Dam (Vermont) is Typical.

Screen analysis is not the only sand specification to be met! Fineness modulus limits of 2.40 to 2.90, with maximum variation of 0.15 in 9 of 10 tests, requires Water Scalping-Classifying Tank for accurate control over pit variations for entire construction period.



(OUTSIDE CURVES ARE SPECIFICATION LIMITS)

The Eagle Water Scalping-Classifying Tank with its automatic valves, metering splitter gates and multi-cell collecting-blending flume retains the needed sizes of sand to meet specs and rejects excess of any size, for secondary market use. The Eagle Screw Unit washes, finish classifies and dehydrates the sand. Better concrete is assured.

Savin Brothers, Inc., Bloomfield, Conn., has long used Eagle Sand Processing Equipment on jobs all over the northeast. Learn what Eagle experience and service can do for you—Send for Catalog 58.

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EAGLE IRON WORKS

Factory-Trained Distributors Everywhere

EAGLE IRON WORKS
ENGINEERS • MANUFACTURERS
159 HOLCOMB AVE., DES MOINES, IOWA

For more facts, use Request Card at page 18 and circle No. 385

Management

Highways:

Control of the work and materials

by **GEORGE E. DEATHERAGE, P. E.**
construction consultant

Again taking a Florida road contract as typical, a contractor has to observe certain regulations concerning subletting, labor force, completion date, work suspension, and acceptance of payment.

Once a contract has been awarded to a road construction firm, the contractor cannot sublet, assign, or otherwise dispose of this contract or any part of it without the highway department's consent. If approval is given, the contractor files copies of all subcontracts with the engineer. But this does not release the contractor or his surety of any liability under the contract and bond.

A subcontractor is recognized only as an employee or agent of the contractor and, like any employee, his removal may be required by the engineer.

The start of work

The contractor begins work no later than the limit set in the proposal and provides enough labor and equipment to carry on the work at as many points as the engineer thinks necessary to complete the job within the time allowed. Within 10 days after the contract has been awarded, the successful bidder submits a working schedule to the highway department that shows, on a prescribed form, the dates he expects to complete various parts of the work.

At least 5 days before he plans to begin work, the contractor notifies the highway department, and the engineer gives him formal notice to proceed, designating the point or points at which the work is to start. However, if the contractor starts work, it is deemed a waiver of this formal notice by the engineer. At least two days before beginning important features of the work, the contractor notifies the engineer in writing.

The contractor carries out the work in a way that will cause the least practicable interference with traffic. The engineer may require him to finish one section on which work is in progress before starting another.

Work is arranged and materials disposed of so as not to interfere with the operations of adjacent contractors. Each contractor is responsible for damage done by him or his agents to another contractor's work. Adequate drainage must be in effect at all times.

All work is generally performed during daylight hours but, for special operations, night work may be done if it is authorized in writing by the engineer and adequate artificial light has been provided.

The contractor employs superintendents, foremen and workmen who are careful and competent. If the engineer determines that an employee is unsatisfactory, the workman may be discharged. In such a case he cannot be employed again on the job unless the engineer's written consent has been provided to the contractor.

"ON THE JOB WHEN YOU WANT THEM!"

SYLGAB
STEEL and WIRE ACCESSORIES for Fast
FIREPROOFING
of Structural Steel

RIGID BEAM CLIP
5' lengths
— installed with lightning speed.
Made of #12 or #10 gauge galvanized.

★

HAUNCH STIFFENER
for beams over 16" deep. Made of #10 or #12 gauge galvanized wire.

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TOGGLE HANGERS
More rigid than any wire. Used in conjunction with
SYLGAB SNAP-ON HAIRPIN CLIP
to tie main and cross furring together.

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Sylgab Steel & Wire Accessories conform to the specifications of the Concrete Reinforcing Steel Institute.

Quality — Service
Ease of Installation

SYLGAB
STEEL & WIRE CORP.
79-05 Cooper Ave., B'klyn 27, N. Y.
BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES
Request Catalog—Phone or Wire Collect

For more facts, circle No. 386

BITUMINOUS DISTRIBUTOR — made by Municipal Supply Co., South Bend, Ind., and used by Mr. Gooch — spreads 16,000 gallons of material per load. It is Wisconsin-powered.
3 years and 3,000,000 gallons of bituminous spread later...

MODEL VG4D—25 to 37 hp.
Other models from 3 to 56 hp.

WISCONSIN ENGINE
shows little wear

Take the word of an asphalt contractor—an air-cooled Wisconsin Engine is the low-cost power answer for a large bituminous distributor. But let Mr. W. E. Gooch, of Rochester, Ind., tell you why:

He used his Municipal Supply distributor three years running to apply about 3,000,000 gallons of asphalt cutback and road oils. At this time, "we took down the Wisconsin Engine, believing that it would certainly require some service," he states.

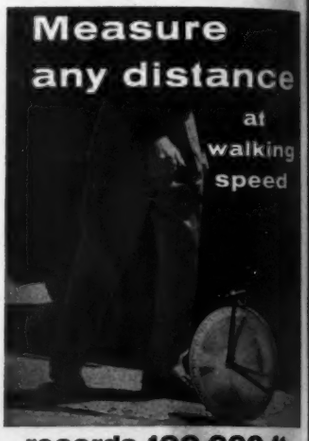
Upon removing the heads, he was surprised to find *no appreciable engine wear*. Since the heads were off, he had the valves ground — although this could have waited another season, he adds.

Here's proof that an air-cooled Wisconsin can beat the heat and the job. And you don't have to worry about dry-ups, freeze-ups, water, anti-freeze — nor about keeping radiators, fan belts, and other water-cooling parts clean.

Be sure to specify heavy-duty air-cooled Wisconsin Engines on your construction equipment. Get Bulletin S-251. Write to Dept. C-20.

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines C-223

For more facts, use Request Card at page 18 and circle No. 387



records 100,000 ft. *automatically!*

It's So Easy to measure with a Rolatape ...and you save time on every estimating job...no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

See your engineering and surveying instrument dealer or write for complete information today!

Rolatape, Inc., 1741 14th St., Santa Monica 2, California

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.

Rolatape
Measuring Wheels

For more facts, circle No. 388

This is the fifty-seventh of a series of articles on Construction Management by George E. Deatherage, P. E., The National Schools of Construction, Satsuma, Fla. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by George E. Deatherage & Son, Construction Consultants, Satsuma, Fla.

Employees

All workmen should have enough skill and experience to perform their work. Those on special work, such as bituminous courses or mixtures, concrete bases, pavements, or structures, or in any trade, should be able to do their jobs properly and be able to operate the necessary equipment.

If the contractor fails to remove incompetent employees, or fails to furnish proper equipment, the engineer may withhold all estimates due, or may suspend the work until the requirements are complied with. No equipment should be used that will damage the roadway or adjacent property, and no item on the job should be removed without the engineer's consent.

Each month during the life of the contract, the contractor submits to the engineer a report that shows (1) the total number of laborers employed that month and (2) the total number of men in an administrative capacity. These reports should be submitted within 10 days after the end of the month.

The department or state highway engineer has the authority to suspend the work, or part of it, for as long as he thinks necessary because of weather or other unfavorable conditions, or because the contractor fails to carry out orders or provisions of the contract. The suspension order is in writing and gives in detail the reason for it. When work is stopped, the contractor stores materials so that they will not impede traffic or become damaged, and he takes precautions against deterioration of the work already done. The contractor cannot suspend the work or remove equipment and materials without the written permission of the engineer. No allowance is made for suspended work except an equivalent extension of time to complete the contract.

Completion

The contractor must complete the work specified in the contract within the time stated in the proposal. This time can be adjusted because of work ordered by the engineer or because of an omission by the highway department. It is the engineer who determines if time should be added to that set in the proposal.

No allowance is made for a delay caused by the contractor. If carrying out the contract requires a greater value of work or material than originally set forth in it, the contract time is increased in the same ratio as the added value bears to the original value.

Delay in completing the work causes public inconvenience and also increases the administrative costs to the highway department. If the contractor fails to complete the work within the time laid down, a sum, determined from a regular schedule, is deducted from the money due him for each day that the job remains uncompleted.

If the contractor defaults and the work is done by the highway department, the contractor and his surety are liable for the liquidated damages.

The contract may be annulled for a number of reasons. The engineer may give notice in writing to the contractor and his surety specifying a fault such as failing to begin the work within the time specified; failing to do it with enough men, equipment, and materials to insure prompt completion; doing the work unsuitably or refusing to do it over if defective; or discontinuing the work. The engineer may also give notice if

(Continued on next page)

NEWEST OF THE GREAT NEW MILLER WELDER/POWER PLANTS

AD-225-L GASOLINE ENGINE-DRIVEN AC/DC WELDER/POWER PLANT

This is as close to being "an all-around hand" as you're ever likely to find. For instance:

A-C or D-C WELDING. The AD-225-L produces 300 amperes at 30 volts a-c or 225 amperes at 30 volts d-c – both at 100% duty cycle. Ample open circuit voltage gives superior results with a-c, d-c or a-c/d-c electrodes.

METALLIC INERT GAS WELDING. Using the d-c side of the AD-225-L, and with new style hand guns feeding small diameter wire from spools, aluminum, mild or stainless steel may be welded by the MIG process. Power for the gun is provided by the 115 volt d-c outlet.

A-C POWER PLANT. As an a-c power plant, this model produces 7 KW of 115/230v single phase 60 cycle current.

AUXILIARY D-C POWER. While welding, the AD-225-L delivers 1 KW of 115v d-c which is ample for operation of flood lights, power tools, etc.

Complete information sent promptly.

miller ELECTRIC MANUFACTURING CO., INC., APPLETON, WISCONSIN

Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal

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The Most Economical Way to Handle Concrete

THE "AIR EXTRUSION" METHOD

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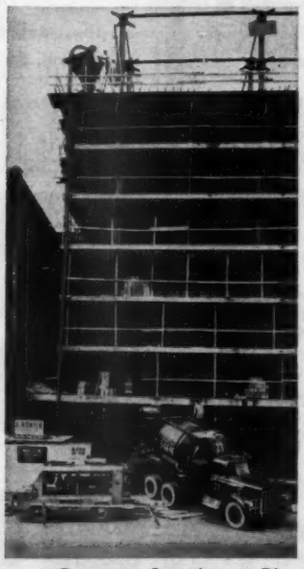

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• Open Pours • Hard-to-Get-to-Pours • Tunnel Linings • Pressure Grouting • Blowing Sand or Pea Gravel Backfill • Transporting Concrete Into Common Receiving Bins

GET DONE FASTER, BETTER, MORE PROFITABLY WITH THESE "ADVANCED DESIGN" FEATURES

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To Help You to More Profits

Let AIRPLACO's Engineering and Technical Staff assist you. Through years of experience on all kinds of jobs, we can often recommend methods and techniques that will save you time and money. Next time you have a concrete job . . . call on AIRPLACO. There's no cost or obligation of course, so write, wire or phone when you have a problem.

Send for FREE BROCHURE and COMPLETE LINE CATALOG

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1007 WEST 25TH ST. • KANSAS CITY 8, MO.

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management

(*Continued from preceding page*)

the contractor becomes insolvent or is declared bankrupt, or allows any final judgment in favor of the state or final judgment growing out of the contract to stand against him unsatisfied for 48 hours.

Contractor's failures

If, within 10 days, the contractor fails to correct the conditions about which a complaint is made, the highway department, with a written certificate from the engineer stating the failure, has the authority to take the work out of the contractor's hands without violating the contract. The department can appropriate any materials and equipment on the site and find other means for carrying out the contract. The cost of completing the work is deducted from the money due the contractor. If the highway department does the job for less than would have been payable under the contract, the contractor is entitled to the difference. If it costs the department more to complete the work, the contractor and surety are liable and must pay the state the excess.

The contract is considered complete when all work is finished and has been accepted by the engineer.

All work is measured by the engineer according to U. S. Standard Measures. No allowance is made for surfaces constructed over a greater area than authorized, or for material moved from outside slopestakes and lines shown on the plans, except when it is done upon written instructions from the engineer.

The compensation provided in the contract is accepted by the contractor as full payment for performing the work and for all necessary materials, labor, equipment, and incidentals. It also covers any loss or damage arising from the nature of the work or from the elements and any expense incurred by the suspension of the work.

When alterations in the work are ordered and performed, the contractor accepts payment at the contract unit prices for the actual quantities of work done.

Force account

All extra work done on a force account basis is performed as the engineer specifies and is paid for as follows: For the labor and the foreman who are in direct charge of the specified operations, the contractor receives the current local rate of wages agreed upon in writing before starting the work. To the sum of these wages, 15 per cent is added as compensation to the contractor for supervision and furnishing small tools and ordinary equipment. In addition, he receives the cost of the social security taxes and insurance involved in the wages paid, plus 15 per cent of this sum. The contractor also receives the cost of materials delivered at the site, including transportation charges, as well as 15 per cent of this total sum.

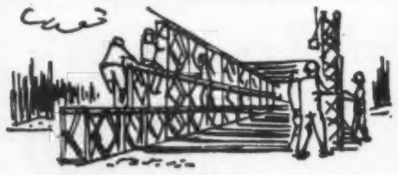
If special equipment is rented, the contractor is allowed a rental price in accordance with the equipment rental schedule established by the department. If the equipment is not listed on the schedule, payment is made at a rental price agreed upon in writing before the work is done. There is no percentage added to the equipment rental price.

At the end of each day, the contractor's representative and the inspector compare records of extra work done on a force-account basis. Copies are made in duplicate on a form for this purpose; one copy is given to the engineer and one to the contractor. Claims made by the contractor for force account work are submitted on certified statements to which are attached original receipted bills for the materials and transportation charges. They are given to the state highway engineer on the current estimate of the month in which the work was done. No allowance is made for any increase or decrease in common carrier rates.

Payments

The highway department can cancel the construction of any item in

WHEN TIME COUNTS — Look to
BAILEY BRIDGING
FOR FAST ERECTION

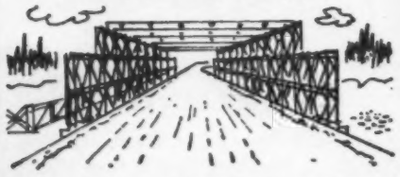


Unskilled labour can quickly assemble the standard bridging components. Bailey Bridging is the ideal answer for emergency or rush schedules to provide temporary or permanent bridging.

QUICK LAUNCHING

Using a simple cantilever system, the bridge is quickly moved across the river. Can be decked with timber supplied locally or with special steel decking.

AND CLOSING THE GAP!



In record time — a bridge like this appears and immediately begins to carry traffic across former barrier. Such an economical method of spanning rivers, valleys and gorges is a major factor in opening remote territory for the tourist, mining and lumbering industries.

Every Part Fully Guaranteed
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Sole Distributors for Bailey Bridging in Canada and U.S.A.
World Licensees, Thos. Storey (Engineers) Ltd., Stockport & London, England
38 Commercial Road, HU. 5-4424, Toronto, Ont.

U. S. REPRESENTATIVES

Timberland Machines Ltd.	Blaw-Knox Bridge Co.	Bailey Bridge Equipment Co.
25 Park Street	McClure Building	1747 Lincoln Avenue,
Lancaster, New Hampshire	Frankfort, Kentucky	San Luis Obispo, California

For more facts, circle No. 391

The BURCH Force Feed SPREADER

FOR UNIFORM DEPOSIT OF MATERIAL

The nationally known chip and stone spreader with the exclusive Burch dual feed gate for material depth control.

The standard tool for heavy matting and seal coating, forward or backward spreading.

Write today—
Ask for the complete data.

The BURCH Corp.
CRESTLINE, OHIO, U.S.A.

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Warns Miss Southern

A stitch in time is importa... retread in time can save a l... money. Why risk costly down... "Do it yourself" tire maintena... Southern Tire experts provide inspection, pick-up and delivery giant tires.

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Rib Treads from 1100 x 24 to 33.5 x 3...

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CHOOSE AN EXPERT
CALL SOUTHERN TIR...

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Phone Collect EV 3-2312

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the contract by paying the contractor the cost so far incurred on this item.

If satisfactory progress is being made, the contractor receives partial payments on monthly estimates, based on the amount of work done or completed. These payments amount to the total value of the work done to the date of the estimate, based on the unit quantities and the contract unit prices, less an amount equal to either 10 per cent of such value or 5 per cent of the original contract amount, whichever is the smaller, and less payments that have been made previously.

When the contract covers two or more jobs, the suspended payment retained by the state is determined separately for each individual job as though each job were covered by a separate contract. The state may also deduct from any estimate the amount of any unsatisfied claim against the contractor for labor or materials, but it is not required to do so.

If defective work or material is discovered, or a reasonable doubt as to the integrity of the work arises before the final acceptance, the estimate and payment are not made until the defect has been remedied and the doubt removed.

If, after the final estimate of the work, a delay in computing the final estimate is anticipated, the engineer may allow the contractor a portion of the suspended payment on a semi-final estimate.

When the job is done, and the en-

(Continued on next page)

Net revenue on the Kansas Turnpike in May, before interest, represented a gain of $27,500 over the previous May. The net total was $394,874, compared with $367,356 for May, 1959. Actual toll revenues were $457,982, including $363,146 from passenger cars.

Where SPECIFICATIONS call for . . . . .

HIGH DEGREE SOIL COMPACTION

BARCO RAMMERS are THE ANSWER!

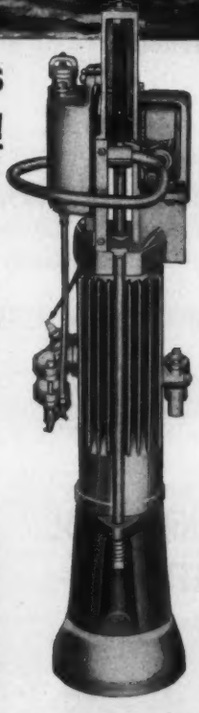
YOU can't get *high degree* SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

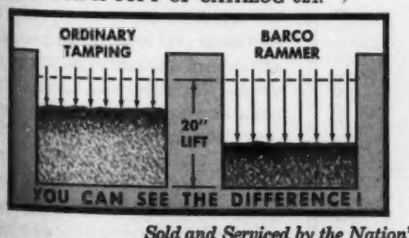
High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches.

ONE MAN OPERATION — On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18" trench backfill, using lifts up to 24", the rate is 360 to 600 feet per hour.

ASK FOR A DEMONSTRATION— We will be glad to arrange a demonstration for you; see our nearest distributor or write.

SEND FOR A COPY OF CATALOG 621.





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BARCO MANUFACTURING CO.

5181 Hough Street • Barrington, Illinois

BARCO RAMMER *for High Degree Soil Compaction*

BARCO-VIBRA TAMP *for Granular Fill and Bituminous Surfacing*

For more facts, use Request Card at page 18 and circle No. 394

Portable *Aggregate* Dryers

Tarco "Flash-Flame" Aggregate Dryers are **fast, efficient, job-tested** machines. Used for **drying stone** in pavement repair; for **drying sand** for sand blasting and for air placed concrete.

Two men can move this simple-to-operate dryer. **Set up and start producing dry materials in 5 minutes.** The "Flash-Flame" Dryer is light enough to transport in a pick-up truck; yet is ruggedly built for constantly hard work. Dries—and screens—in one easy continuous operation.

You have a choice of **gasoline engine** or **electric motor drive; kerosene, L.P. bottled gas,** or **natural gas heat.** Tarco portable, rotary "Flash-Flame" Aggregate Dryers come in two sizes: Model AD-7; Model AD-9.

See your Tarco dealer or write us about your material drying problem.

TARRANT MANUFACTURING COMPANY

31 Jumel Place, Saratoga Springs, N. Y.

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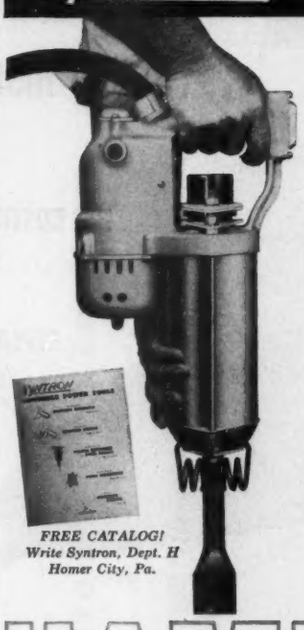
SYNTRON ELECTRIC



FREE CATALOG! Write Syntron, Dept. H Homer City, Pa.

Do every job faster, easier, better with a SYNTRON Electric Hammer.

Chip, channel, drill, cut, scale —your SYNTRON Hammer delivers 3,600 blows a minute *continuously* without breakdown!

Depend on Syntron for more speed, more power, lifelong low maintenance, too!

SEE THEM IN ACTION!
SYNTRON ELECTRIC HAMMERS

Available in 5/8" to 2" capacities.

The Syntron Sales Representative in your area will gladly arrange an on-the-job demonstration. Phone them for fast action!

HAMMERS

SYNTRON COMPANY

QUALITY EQUIPMENT SINCE 1921

227 Lexington Ave. Homer City, Penna.

OTHER SYNTRON EQUIPMENT OF PROVEN DEPENDABLE QUALITY

GASOLINE HAMMERS

VIBRATING SCREENS

CONCRETE FLOATS

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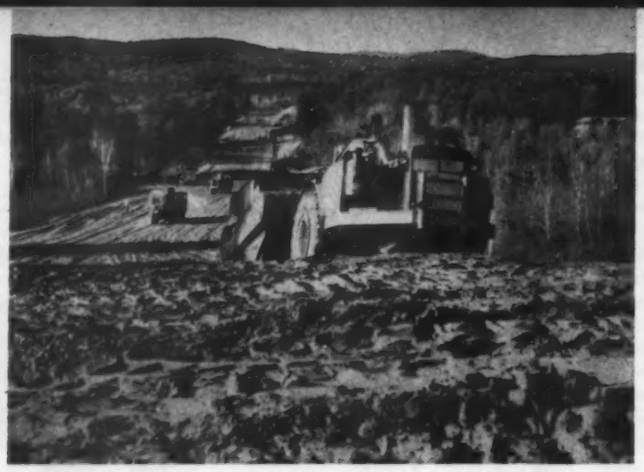
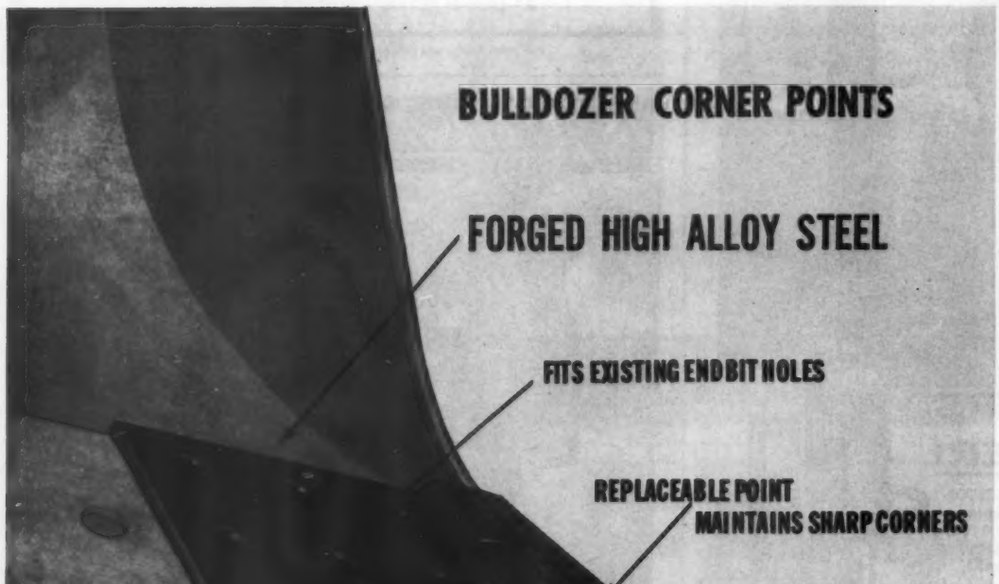
Construction Camera



Daily production of 12,800 cubic yards, or 1,600 yards for each of the eight haul units, is the rule for Torrington Construction Co., Torrington, Conn., on the Northway project near Glen Falls N. Y. This new SynchroTouch DW21-No. 470 tractor-scraper is hauling up one of the grades.

Excavation work for the Riverview Junior High School at Murray, Utah, is being done by a Unit Model 614 ½-yard hoe. The contract for the earthwork, which includes excavation for footings, basement, and heating trench, is held by Bob Schocker & Co., Salt Lake City.

H&L Teeth that really dig



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SHARP POINT PILOTS AHEAD OF CUTTING EDGE ELIMINATES SIDE DRAFT FOR PRECISION CUTS - INCREASES DIGGING EFFICIENCY - GREATER PRODUCTION AT LESS COST

SEE YOUR LOCAL H&L DEALER

H&L TOOTH COMPANY
1340 SOUTH GREENWOOD AVE.
MONTEBELLO, CALIFORNIA

For more facts, use Request Card at page 18 and circle No. 397

(Continued from preceding page)

gineer has made the final inspection, he prepares a final estimate showing the value of the work. All prior estimates and payments are subject to correction in the final estimate and payment. The amount, less any sums that have been deducted or retained under the provisions of the contract, is paid to the contractor within 30 days after the final estimate has been approved by the engineer. This is done, providing the contractor has furnished a sworn affidavit stating that all bills are paid and no suits are pending in connection with the work, and the surety on the contract bond consents to this final payment and agrees that it does not relieve the surety of any obligations under the bond.

(Next month's installment will deal with "Highways: Municipal construction contracts.")

Gus Wagner sole owner of Mixermobile Mfrs.

■ Gus H. Wagner has become the sole owner of Mixermobile Mfrs., Portland, Ore., manufacturer of mobile concrete mixing equipment and the Scoopmobile line of self-propelled loaders, by purchasing the interests of his brothers.

The firm was founded in 1940 when Wagner and his brothers, Harold and Ed, developed a self-propelled concrete mixer; the Scoopmobile loader was first produced in 1944 and since then has become the company's principal product. There are now nine different models in the line of 3 and 4-wheel loaders.

Wagner will continue as president of the firm. His son, Stan Wagner, is general manager, and another son, Vern, has been made vice president and plant manager.

With the purchase of the plant, Wagner has started a development program that includes an expanded engineering and research staff and new models of loaders and front-end attachments.

Coming conventions are listed on page 65 of this issue.

Some 1,200 acres of wooded area interfering with electronics equipment at the National Aviation Facilities Experimental Center near Atlantic City, N. J., are going under the 8-foot-diameter, 20-foot-wide steel drums of the 150-ton R. G. LeTourneau Tree Crusher. Ax-head cleats are welded to the steel rollers.

Difficult compaction of roadway borrow material that is very sandy and rocky is easily handled on State Route 84 in Tucson, Ariz., by these three BMCO pneumatic-tire SPR-13 rollers. The grading project on the freeway is being done by the San Xavier Rock & Sand Co., Tucson.

Welding aluminum pipe covered in AWS booklet

■ The American Welding Society's Committee on Piping & Tubing has prepared a 40-page booklet that covers, in a condensed form, all phases of aluminum pipe welding.

"Recommended Practices for Gas Shielded-Arc Welding of Aluminum and Aluminum Alloy Pipe" includes some important tables. A conversion table gives the ASTM alloy designation and the corresponding commercial alloy number that has been adopted by the Aluminum Association. Another table recommends the filler metals that should be used for welding different combinations of aluminum alloys; others indicate the actual settings for current, gas flow, number of passes, etc., that are required for various pipe sizes and thicknesses.

Copies, at $2, are available from AWS, Dept. T, 33 W. 39th St., New York 18, N. Y.

New prestressed group incorporates in Iowa

■ The Iowa Association of Prestressed Concrete Manufacturers has incorporated and is planning a program to provide a regular flow of information on the advantage of their product to architects, engineers, and highway officials.

The group is affiliated with the Prestressed Concrete Institute and consists of six Iowa manufacturers.

Film shows Clark trucks at work

■ A sound, color slide film entitled "Dollars and Sense" has been produced by the Industrial Truck Division of Clark Equipment Co., Battle Creek, Mich., to show the uses and advantages of pneumatic-tire Clark-lift fork trucks of 15,000 to 40,000-pound capacity.

The film depicts the Clark vehicles at work on rough terrain, soft ground, and ice and snow. It is available free for showing to groups, from the Slide Film Department, Industrial Truck Division, Clark Equipment Co., Battle Creek, Mich.

Army tests conversion set to widen aluminum bridge

■ The Bridge Branch of the U. S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., has developed a conversion set that will allow the widening of the T-6 tactical support aluminum bridge from a single lane to two. It is now being tested by the U. S. Army Engineers.

The conversion set consists of half floor beams and various minor items designed to enable the 60-ton-capacity T-6 bridge to take loads up to 100 tons. The T-6 is put together in sections, with the floor beam resting on the lower horizontal member of the truss panels. Made of high-strength aluminum, it is erected on spans that range in length from 90 to 240 feet.

Erection time is said to be faster than for other tactical bridges of the same capacity. The new 2-lane bridge takes only slightly longer to erect than does the original single-lane bridge.

NEW ABC "TYPE MD"
Wire Reinforced Flexible
Ventilation Tubing

For safe, economical removal by suction of fumes, fouled air and dust from bilges, manholes, tanks, tunnels, mines, or for blowing in fresh air. Neoprene coating is airtight, resists friction, oil, moisture. Withstands flexing. Reinforcing wire completely covered. Easy to hang. Simple to couple. Lightweight—only 1/3 of metal duct. Flame resistant. Retractable for carrying or storage. Write for bulletin.

AMERICAN BRATTICE CLOTH CORP.

233 Argonne Rd., Warsaw, Indiana
For more facts, circle No. 398

FOR FAST, LOW-COST HANDLING OF COAL, AGGREGATE, ORE

Look at the performance-proven facts!

• SAVES TIME when dumping—you get more round trips which means more payloads. • MINIMUM MAINTENANCE—there's little to get out of order. • RUGGEDLY BUILT to withstand severe usage. • SINGLE AND TANDEM AXLE units for highway use according to state road law. FOR OFF-HIGHWAY use in coal, aggregates, ore. • CAPACITIES—10 to 100 cubic yards. • CENTER PARTITION available to provide two compartments for better load distribution and extra side support. • DOUBLE OR SINGLE sets of doors lengthwise or cross doors for dumping and spreading. • IDEAL FOR CONTROLLED SPREADING of aggregate on road jobs with power operated or manual door opening. • EACH HOPPER is job engineered to fit your operation and the material to be hauled. Your nearby Marion Distributor will be glad to give you full details on Marion Hoppers best suited to your operation. Marion makes a complete line of hydraulic hoists and dump bodies.

MARION BODIES AND HOISTS

MARION METAL PRODUCTS CO.
Marion, Ohio, U.S.A.

Marion Long-Life Hopper Trailers

For more facts, use Request Card at page 18 and circle No. 399

Construction Camera

A bench area is worked by an International TD-9 before the dragline is moved into place on a 10-mile section of Interstate 95 being built between Portland and Brunswick, Maine. About 113,000 yards of unsuitable clay has to be removed from a 34-foot cut at a bridge approach with a dragline operation.

Factory-built prefab forms—6,000 square feet of Symons units—are used in forming the feed mill and warehouse for Consumers' Cooperative Association, Muncie, Kans. The job calls for a total of 27,000 square feet of forming and some 1,500 cubic yards of concrete.

VERSATILE

. . . form round concrete columns, piers, or posts in any type structure

Wherever round concrete columns are specified . . . in buildings, bridges, overpasses, or any structure . . . SONOTUBE Fibre Forms can do the job, and do it faster and more economically than any other method.

Use SONOTUBE Fibre Forms for full-round, half-round, quarter-round, and obround columns; for pilasters; and for encasing existing structural members with concrete. They are low in cost and easy to place, brace, pour and strip . . . save time, labor and money on the job!

Choose the type that meets your requirements most economically:

1. "A" Coated—standard form for exposed columns.
2. Seamless—premium form for finished columns.
3. "W" Coated—for unfinished or unexposed columns.
4. Encasement Form—for concrete encasement of existing posts, piles, utility lines, etc.
5. Special—for use in water or excessive dampness.

Sonoco SONOTUBE Fibre Forms are available in standard 18' lengths or specified lengths . . . sizes 2" to 48" I.D. Can be sawed.

Job illustrated: U.S. Rt. #25 Overpass over Keowee Street, Dayton, Ohio, Contractor: Maxon Construction Company, Engineer: Howard, Needles, Tammen & Bergendoff.

See our catalog in Sweet's

For complete information and prices, write

SONOCO
Construction Products

4944

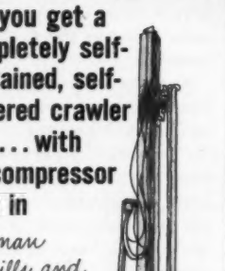
SONOCO PRODUCTS COMPANY, HARTSVILLE, S. C. • La Puente, Calif. • Fremont, Calif. • Montclair, N. J. • Akron, Indiana • Longview, Texas • Atlanta, Ga. • Brantford, Ont. • Mexico, D.F.

For more facts, use Request Card at page 18 and circle No. 400

NEW SCHRAMM C-42 CRAWLER ROTADRILL SLASHES ROCK REMOVAL COSTS!

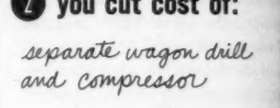
1 you get a completely self-contained, self-powered crawler unit . . . with air compressor built in

one man drills and drives



2 you cut cost of:

separate wagon drill and compressor



one or two extra men

3 with a Rotatool **you get:**

blow at bottom of hole

deeper, faster penetration

lower cost per cubic yard removed!

4 compare:

	MODEL C-42 ROTADRILL	CRAWLER WAGON DRILL
Air required	250 cfm	600 cfm
Hole size	4½"	4½"
Drill steel size	3¾"	2"
Equipment cost	$29,825.	$16,200 for crawler wagon drill $18,545 for 600 cfm compressor $34,745 total
Men needed	One	2 or 3

Write for full information on new Schramm Model C-42 Crawler Rotadrill and get name of your nearest dealer.

Schramm

ROTADRILLS AND ROTATOOLS

762 North Garfield Ave., West Chester, Pa.

For more facts, use Request Card at page 18 and circle No. 401

Two jobs—trench excavation and placement of pipe sections 6 feet long and 36 to 96 inches in diameter—are done by a Manitowoc Model 3100 backhoe on the Kostner Avenue project, a sanitary and storm-sewer job in Chicago. Daily production is 14 sections per day, or 80 to 85 feet of line.

Gantry and crawler cranes are the work horses of the equipment lineup at Barkley Dam Project lock and canal on the Cumberland River near Paducah, Ky. Gulf lubricants are being used exclusively for the U. S. Army Corps of Engineers project, which requires a million yards of excavation and 550,000 yards of concrete.

Automatic tracking theodolite undergoing tests by army engineers

An automatic tracking theodolite that provides a rapid method of extending geodetic control where line-of-sight between stations cannot be established has been developed by the U. S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., and is currently undergoing engineering tests.

The new theodolite, capable of automatically pointing on stationary targets and of automatically tracking fast-moving airborne lights, will be used primarily by field artillery units and by topographic units of the U. S. Army Corps of Engineers.

A minimum of three automatic theodolites is required in operation. Two are located at the ends of an established base line, and the other is located at a point whose position is to be determined. A central computer station is connected to all theodolite stations by a radio data-transmission link. The computer is capable of controlling a maximum of 14 stations, including the base-line stations. All theodolites are simultaneously sighted on the elevated target on command, and the azimuth and elevation data are automatically transferred from the individual theodolites to the central computer. The computer, in turn, determines each position of the target and stores these values for future reference. For the unknown ground positions, the computer determines the location by solving the resection problems.

Preliminary pointings of each theodolite are accomplished by the station observer. After he has brought the target image into the field of view, he causes the theodolite to automatically hold the image in the center of the field as long as desired.

The telescope has a resolution of two seconds of arc; tests show theodolites capable of tracking targets to an accuracy of five seconds.

DITCH WITCH TRENCHER

The measure of Success

CALL COLLECT

SCALE

COMPARE

SIZE: DIGS FROM 4" TO 16" WIDE AND UP TO 6' DEEP

COSTS: AS LITTLE AS 2¢ PER FOOT!

ABILITY: JOB PROVEN!

LIFE: AS HIGH AS ½ MILLION FEET!

EASE OF OPERATION: See a demonstration!

CALL COLLECT!

CHARLES MACHINE WORKS, INC.

636 B STREET ● CALL COLLECT, FE 6-4404 ● PERRY, OKLA.

For more facts, use Request Card at page 18 and Circle No. 402

A REPUTATION FOR OUTSTANDING PERFORMANCE

CONVEYCO

BUILT EQUIPMENT PROVEN ON WEST'S MAJOR PROJECTS

Designers, engineers and manufacturers of special construction equipment—
Complete crushing and screening aggregate plants
•
Feeders—Belt, pan and reciprocating
•
Sand washers—Wheel, drag and screw
•
Batch plants portable and stationary
•
Cement Silos
Belt Conveyors
Screw Conveyors
Chain Conveyors
Bucket Elevators
Conveyor Idlers
•
Conveyor Scales
Batching Scales
•
Special engineered equipment—
Tunnel Forms
Conduit Forms
Prestressed Beam Forms
Column Forms
Portable Field Bins
Loading Bins—portable stationary

A current example of Conveyco designed and manufactured equipment is the earth moving and processing system on the ABIQUIU DAM project in New Mexico. Part of this system is the truck drive-over dump station (shown above) which removes oversize and transfers earthfill material to a 4300 ft. transport belt. The belt moves 3500 TPH to a truck loading bin where further screening is done. Water is added automatically, as required, at the plant near the axis of what will soon be the world's fourth highest earthfill dam.

This high capacity transport and processing system is one of the many examples of the successful application of Conveyco's designing, engineering and manufacturing experience.

Since 1918, Conveyco equipment has been used on the West's most important projects. Leading construction firms throughout the country have learned to depend on reliable Conveyco special construction equipment. Check the partial list of equipment in the adjoining column.

Let our engineers help you plan the equipment for your next job.

Low level, high capacity portable batch plant and cement silo.

THE CONVEYOR CO.

ENGINEERS and MANUFACTURERS

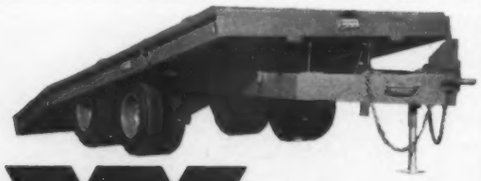
3260 E. SLAUSON AVE. • LOS ANGELES 58, CALIF.

For more facts, use Request Card at page 18 and circle No. 403

Construction Camera

Steel for a new supermarket in Buffalo, N. Y., is set by a 30-ton Lorain Moto-Crane owned by Buffalo Structural Steel Co. The rig sets 100 half-ton pieces of steel in an 8-hour day with 85-foot boom at radii up to 70 feet. The 180 × 142-foot structure is located in the Thruway Plaza shopping center.

A regular assignment for this Hough Model HU Payloader in Radford, Va., is maintenance and utility work for 55 miles of streets. It is also used for work on new street construction. Here, grading is done for a 6 × reinforced-concrete box culvert, part of a new street project.



WISCONSIN TILT TRAILERS

Cut job costs on the big and tough hauling assignments with the rugged, dependable Model 1400. Automatic, hydraulic EASY UP—EASY DOWN, 14 and 16-ton tilt deck trailer is so perfectly balanced that one man can hitch up, lower deck, load and roll with a Wisconsin. Man's weight lowers or levels and locks trailer. No blocks or ramps needed.

Doubler plates at all critical welds . . . exclusive, unbreakable rear channel . . . won't tear out . . . EVER!

Model 1400 only $2125 w/deck & tires, plus freight & tax

WISCONSIN TRAILER COMPANY, INC.
Richfield, Wisconsin Phone HUBERTUS 109

For more facts, use Request Card at page 18 and circle No. 404

Hyster appointment

■ Hollis Conner has been made sales manager of the International Division of Hyster Co., Portland, Ore., which is responsible for all manufacturing, sales, and service outside the United States and Canada. He will work from the division's headquarters at Peoria, Ill.

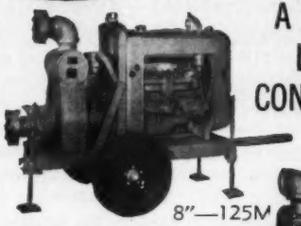
Conner has been assistant sales manager of the division since 1958. Before that, he was resident manager in charge of sales in Australia and the South Pacific.

District office opened by Leschen Wire Rope

■ Leschen Wire Rope Division, H. K. Porter Co., Inc., St. Louis, Mo., has opened a district office and warehouse at 216 S. Klein St., Oklahoma City, Okla.

It will serve the midwest sales district, which includes Oklahoma, Texas, Kansas, Nebraska, Colorado, Wyoming, and South Dakota. Hugh Bergin is district sales manager.

RICE RICE PUMPS
A Complete Line for CONTRACTORS



8"—125M

6"—90M

CENTRIFUGALS
All Standard AGC Sizes 1½" to 10"
Air and water cooled power—Modern Design—Precision built.

DIAPHRAGMS
2", 3", 4" SINGLES
BIG 4" DOUBLE
Single and double styles—48 to 1 reduction—gearing fully enclosed and operates in oil.

MASONRY CUTTERS
12 and 30 Ton Sizes

RICE Pump & Machine Co.
BELGIUM, WISCONSIN
FACTORY BRANCH — W. 41 Ridgewood Ave., Paramus, N. J.

For more facts, use Request Card at page 18 and circle No. 406

SAVE DOWNTIME on asphalt distributors and road equipment

TAR-X is fast! economical! easy to use!

1. spray, paint or mop TAR-X on surface
2. let TAR-X penetrate 15 minutes or more
3. hose off deposits with clear water and pressure hose
4. harmless to paint

Certified LABORATORIES
You can rely on Certified Products.
2709 Ludelle Street
FT. WORTH, TEXAS
NEW ORLEANS
SAN FRANCISCO

For more facts, use Request Card at page 18 and circle No. 405

HARBORMASTER MARINE TRACTOR
. . . work horse of the waterways

If you need easily installed power, better steering control, safety in shallow water, easier maintenance, more efficient performance, simpler hull design, more cargo space or simplified crew operation . . . you should investigate Harbormaster Outboard Propulsion and Steering. Harbormaster is a *complete* power and steering package . . . powerful, highly maneuverable, economical to operate and maintain.

See for yourself what Harbormaster Marine Tractors can do. Send for big illustrated Catalog. If you have a requirement, our Marine Architect will make recommendations without obligation.

MURRAY & TREGURTHA, INC.
44 Hancock St., Quincy 71, Massachusetts

For more facts, use Request Card at page 18 and circle No. 407

Round-the-clock batching for up to 9 days of slip-form pours is required of this Noble portable plant for work at Vandenburg AFB, Santa Maria, Calif. Aggregates are conveyor-loaded to a 100-ton, 3-compartment bin. A batch conveyor loads trucks. Some 22,000 yards of concrete is needed for the job.

One man loads and unloads this Link-Belt dragline being hauled on a Dorsey MMT-75 trailer to a new work area on the GM&O Railroad and Moffat Road project being done by Laidlaw Contracting Co., Mobile, Ala. The 34-ton dragline and the six 1½-ton mats used in the loading bring the payload to some 43 tons.

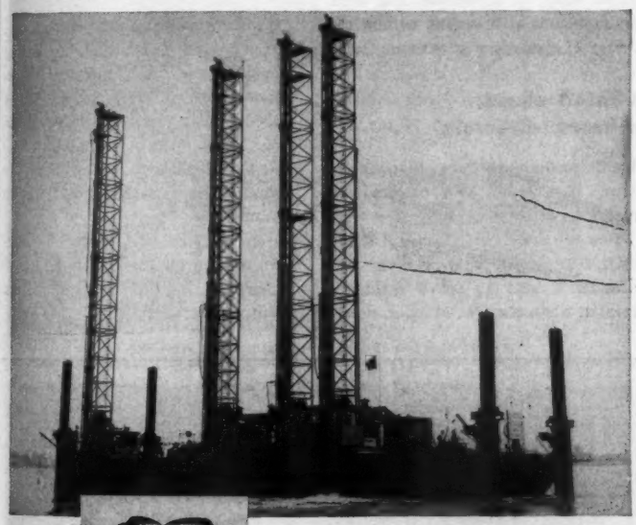
District manager named by Beaver-Advance

■ Walter Eichhorn will serve as district manager of the new sales-engineering and rental operations in the New York metropolitan area for Beaver-Advance Corp., Ellwood City, Pa. He will operate, temporarily, from the branch offices at Saddle River, N. J.

Eichhorn will work with existing dealers and contractor-users of Beaver-Advance tubular steel scaffold, hoisting towers, and concrete-handling equipment, and he will be responsible for the establishment of new distributor outlets in Connecticut, southeastern New York, and northern New Jersey.

Ramset appointment

■ James M. Voorhees, Jr., is the new district sales manager for Ramset Fastening System in the states of Connecticut, Rhode Island, and northern New York.



***Operation*— deepening river channel**

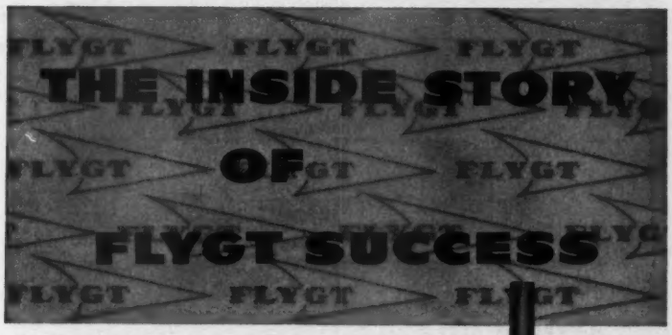
***Machine*— unique drill-barge working round the clock**

***Bits*— Brunner & Lay 6″ Hole-Masters...of course**

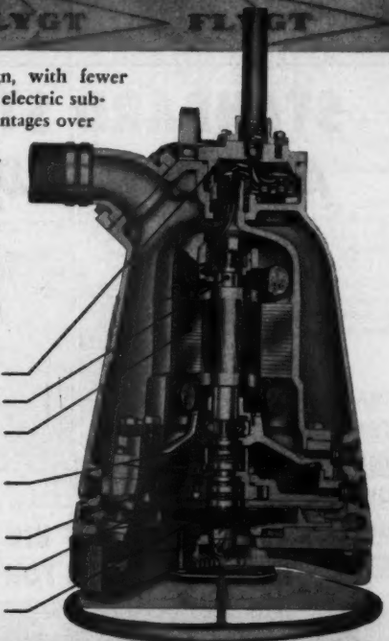
Call your local Brunner & Lay dealer, or our nearest plant, request catalog #759. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. *Est. 1882.* Plants & conversion shops: Albuquerque, Asheville, Birmingham, Dallas, Dorchester (Boston), Long Island City, Los Angeles, Philadelphia, Sacramento, Seattle, Yardley (Spokane), Lachine, Que.

Brunner & Lay CARBIDE ROK-BITS • DRILL RODS INTRASET STEEL • COUPLINGS, ADAPTERS, STRIKING BARS & EXTENSION STEEL • STANDARD OR ROPE THREAD • MOIL POINTS, CLAY SPADES, ASPHALT CUTTERS, ETC.

For more facts, use Request Card at page 18 and circle No. 408



Simple, revolutionary design, with fewer parts involved, gives FLYGT electric submersible pumps definite advantages over ordinary pumps. This internal simplicity produces higher pumping capacity at costs well below conventional units. All cast parts are a special aluminum alloy; impellers to suit each application. Let FLYGT prove itself — ask for an on-the-job demonstration today!



1. Junction box
2. Shaft, journalled in SKF bearings
3. Electric motor, watertight enclosure, running in air
4. FLYGT mechanical seals for heavy-duty
5. Oil for cooling and lubrication
6. Rubber-lined, replaceable diffusers
7. Impeller of special alloy

1½″ B–38 L running dry on construction job

3″ B–80 L under water level on river job

6″–8″ B–150/200 L on power house dam project

FLYGT Corporation HOOSICK FALLS, N.Y.

WESTERN SALES & SERVICE: STANCO MFG'S. & SALES INC., 1666 Ninth St. (CORNER OF OLYMPIC) SANTA MONICA CALIF.

PUMP BETTER ELECTRICALLY — USE FLYGT!

For more facts, use Request Card at page 18 and circle No. 409

More than a billion cubic feet of gas will be carried per day by the Westcoast Transmission Co. natural-gas pipeline when it doubles its capacity in the near future. The 688-mile system runs from the Peace River area of British Columbia-Alberta to the border of the United States.

HIGH IN THE MOUNTAINS OF ARIZONA, a crew of the H. C. Price Co., Bartlesville, Okla., works to complete the company's 335-mile section of the 30-inch Transwestern pipeline. Using experienced personnel and the latest technical innovations, Price has kept the line moving in spite of heavy snow, high winds, and mountainous terrain. The line runs 1,809 miles from Texas to California.

Compact sub-base with Maginniss POWR-PACTORS!

CUT CONCRETE COSTS up to 6%

Eliminate call-backs!

- Self-propelled. Travels up to 50 ft. per minute.
- Available with either gasoline engine or electric motor drive.

Maginniss *vibratory* compaction assures uniform density of sub-base . . . eliminates voids . . . prevents loss of mortar . . . reduces concrete required up to 6%! And, compacted sub-base stops slab settling and cracking . . . eliminates expensive call-backs for repairs.

Find out how Maginniss Powr-Pactors will cut concrete, labor and call-back costs on all your jobs. See your Maginniss distributor today! Maginniss Power Tool Company, 154 Distl Avenue, Mansfield, Ohio.

Maginniss Power Tool Company 154 Distl Ave., Mansfield, Ohio Dept. CE-80
Yes, I want to know more about the Powr-Pactor for compacting sub-base.
name _____
address _____
city _____ zone ____ state ____

Maginniss POWR-PACTOR VIBRATORY COMPACTOR
AA-7822

MODEL PP-18 POWR-PACTOR. Up to 7,000 vpm, 4,000 lbs. adjustable force, gasoline powered.

For more facts, use coupon or Request Card at page 18 and circle No. 410

STANDARD STEEL "S-J"

Maintenance Distributor

DOES THE WORK OF BIG EQUIPMENT ON SECONDARY JOBS FOR LOWER COST

FULL CIRCULATING SPRAY BAR UP TO 12 FOOT LENGTH SEALS COATS AS PERFECTLY AS A FULL FLEDGED HEAVY DUTY PRESSURE DISTRIBUTOR

Standard Steel S-J Maintenance Distributor is available in either trailer or truck mounted type . . . the trailer unit can be quickly converted to truck mounting by removing tongue and running gear. A fuel pump throw out clutch is standard equipment on all models. The clutch disconnects the pump from engine when burners are not being used. The pump and piping provide the following features: (1) Pumps from tank through spray bar (2) Pumps from tank to hand spray (3) Pumps from tank to outside source (4) Pumps from outside source to another outside source (5) Pumps from outside source into tank. This versatility is a very great help in speeding operation of the S-J. Entire pump and piping as well as spray bar can be easily cleaned through its special suck back feature. Write for complete details on Model S-J.

OTHER PRODUCTS OF STANDARD STEEL
ASPHALT DISTRIBUTORS . . . BURNERS . . . POWER AND TRACTION DRIVEN CONSTRUCTION BROOMS . . . MAINTENANCE DISTRIBUTORS . . . TAR KETTLES . . . AGGREGATE SPREADERS STREET FLUSHERS . . . PIPE LINE EQUIPMENT . . . SUPPLY TANKS SHELVING HARDWARE . . . AND AGRICULTURAL EQUIPMENT

Built by The Makers of Standard

Standard Steel Works, Inc. NORTH KANSAS CITY, MO S.J.B

For more facts, use Request Card at page 18 and circle No. 411

Hercules appoints

■ New plant managers and an assistant plant manager have been appointed by Hercules Powder Co., Wilmington, Del., for the new multimillion-dollar polypropylene plant under construction at Lake Charles, La., and at the Parlin, N. J., plant.

The new plant manager at the Lake Charles plant is E. F. Jennings, Jr., former plant manager at Parlin. Replacing him at the New Jersey plant is J. G. Copeland, Jr. The assistant plant manager in Parlin is F. N. Bent. R. J. Bechtel has been made technical assistant to the director of operations at Wilmington.

Clinton elects officers, directors

■ Clinton Engines Corp., Maquoketa, Iowa, has elected new officers and directors.

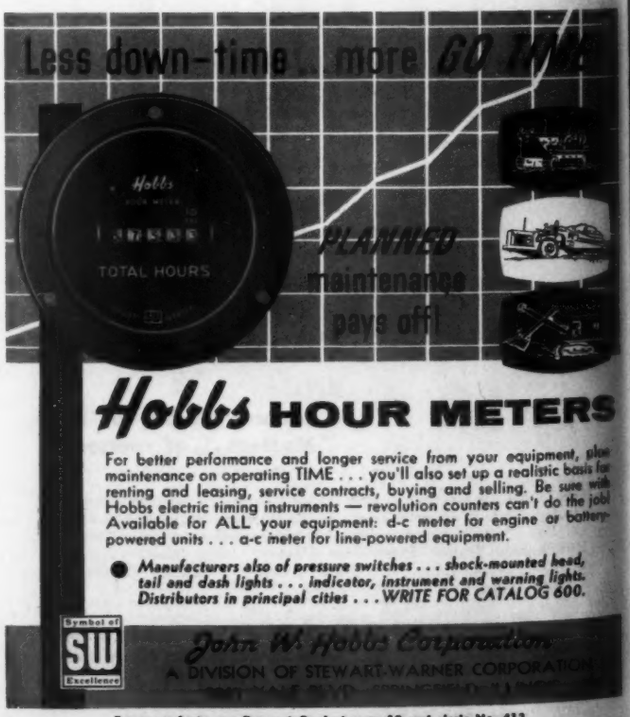
New directors are Alan J. Kraft and George R. Ruppel, both vice presidents, who fill board vacancies created when Karl W. Mueller, president and director, and Ira A. Lutz, vice president and director, resigned their positions with the company. Both Lutz and Mueller will continue to serve Clinton in an advisory capacity.

Named as executive vice presidents were Charles N. Maybruck for finance and Donald B. Suhr for operations. George I. Sundstrom was elected treasurer and Marvin Shaffer, secretary.

Mixermobile names Martin general sales manager

■ Mixermobile Mfrs., Portland, Ore., has named Loren Martin general sales manager to supervise the national sales of the complete line of Scoopmobile self-propelled loaders. For the past three years, Martin has served as district representative for the Pacific Northwest and western Canada.

Before joining Mixermobile, Martin worked for Intermountain Equipment Co., Howard Cooper Corp., and Guy F. Atkinson Co.



Hobbs HOUR METERS

For better performance and longer service from your equipment, plan maintenance on operating TIME . . . you'll also set up a realistic basis for renting and leasing, service contracts, buying and selling. Be sure with Hobbs electric timing instruments — revolution counters can't do the job! Available for ALL your equipment: d-c meter for engine or battery-powered units . . . a-c meter for line-powered equipment.

● *Manufacturers also of pressure switches . . . shock-mounted head, tail and dash lights . . . indicator, instrument and warning lights. Distributors in principal cities . . . WRITE FOR CATALOG 600.*

Symbol of SW Excellence

John W. Hobbs Corporation
A DIVISION OF STEWART-WARNER CORPORATION

For more facts, use Request Card at page 18 and circle No. 412

Workmen weld channel shear connectors to the top flanges of steel beams at the new Steelcase Inc., manufacturing plant at Grand Rapids, Mich. The shear connectors will transfer horizontal shearing forces from the beams to a 6-inch-thick floor slab.

Midwest plant uses new structural design

■ Composite design, a new type of building construction that unites steel framing and concrete floors into a rigid structural system, is being introduced to the Midwest with the erection of a new manufacturing plant for Steelcase, Inc., maker of metal office furniture in Grand Rapids, Mich.

The new 1,146 × 280-foot, 2-story structure incorporates 3,400 tons of structural steel. Channel shear connectors welded to the top flanges of the steel beams transfer the horizontal shearing forces from the beam to the 5-inch-thick reinforced floor slab, with 1-inch topping, which was placed monolithically.

According to the designer, J. & G. Daverman Co., Grand Rapids, composite construction gives the floors of the building greater strength per square foot, reduces the necessary thickness of the floor, makes possible the use of shallower beams and lighter columns, and effects substantial savings by reducing the amount of steel required as much as 25 per cent and cutting erection time.

Over 12 miles of welding was required to join the channel shear connectors to the steel beams. The project, which is proceeding well ahead of schedule, is the largest known composite steel-beam building built in this country so far.

NOW–AIR TOOLS WHEN NEEDED

Worthington's Guaranteed Availability Plan keeps a full complement of tools on the job even if some are in the shop for checkup or repair. All you do is: 1) bring your hand-held Blue Brute air tool to your Worthington distributor. 2) While it's in his shop he will lend you another tool.

See your nearest Worthington distributor for complete details about the Guaranteed Availability Plan. Worthington Corporation, Holyoke, Massachusetts.

60-16

WORTHINGTON

For more facts, use Request Card at page 18 and circle No. 413

New color film features latest Oliver models

■ A new 20-minute, full-color film featuring the recently announced Oliver OC-9 and OC-96 crawler tractors has been released by The Oliver Corp., Chicago. Titled "A Prime Move Forward," the 16-mm film shows the engineering and design features of these machines, with emphasis on the operation of the Oliver Trans-O-Matic transmission.

With operating scenes filmed in all parts of the country, the movie shows typical loading operations with the OC-96 1-yard loader. A simple, direct running narration explains the OC-9 tractor and its operation in nontechnical, easy-to-understand language.

The film concludes with a display of the entire line of Oliver machines. Each model is explained, and the mounted equipment with which it can work is described.

Showings of the film may be arranged for those interested through Oliver dealers.

"THIS LUBRICANT KEPT 'EM ROLLING IN MUD, MUCK AND WATER"

—says J. O. ARCHIBALD
of Redwood City, California

The job was clearing 500 acres of salt marsh for crystallizing ponds. To quote, "We selected LUBRIPLATE No. 107 for track and general lubrication and LUBRIPLATE APG-140 for transmissions and final drives. During the entire job there was no replacements of track rollers nor any tie-ups of equipment due to parts replacement or breakage!"

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

For more facts, circle No. 416

DON'T THROW AWAY CRACKED DIESEL CYLINDER HEADS

You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a Guaranteed good as new condition by the Controlled Heat Process . . . successfully used for more than a Quarter Century.

GUARANTEED TO YOUR SATISFACTION

Send today for price list and a free booklet on the famous Swick-Guth Process, and the name of the dealer nearest you.

SWICK-GUTH CO.
McPHERSON KANSAS • FORMERLY GUTH CO.
"SPECIALISTS IN WELDING DIESEL CASTINGS"

For more facts, circle No. 414

NEW detachable ALL-weather CAB for Model H-30 PAYLOADER

Enables your operator to work comfortably in all kinds of weather. Approved design for this new Payloader; fits perfectly, made of heavy gauge sheet steel and angle iron frame. Full vision SAFETY GLASS windows, mounted in rubber, right side and rear windows slide open for ventilation. Hinged door for easy access, may be removed for summer operation. Optional accessories include wind-shield wipers, heater-defroster, sun visor and rear view mirror. Campbell cabs are specifically designed for all Payloader models — see your Payloader distributor or write direct.

CAMPBELL detachable cab company
WAUCONDA, ILL.

For more facts, circle No. 415

New Jersey road map issued for 1960

■ The 1960 edition of the New Jersey State Highway Department's official map and guide is currently being distributed. The map is the first to be issued by the department since 1955.

Once again, the booklet design, rather than the single-sheet design, is used. In the front of the booklet is a single-page map of the state divided into five longitudinal sections. Each of these sections is shown in larger scale on the following pages. With each of the five map sections there is a list of important recreation and historic sites in the region.

Since highways and streets in the state's two principal metropolitan areas—Camden and North Jersey—are so numerous, the department has included large-scale maps for easy reading. A special fold-out in the end of the booklet has a complete index to cities and towns.

Requests for copies should be sent, not to the highway department but to P. O. Box 555, Elizabeth, N. J.

Royal McBee elects Ryan president

■ Fortune Peter Ryan has been elected president of the Royal McBee Corp., Port Chester, N. Y., succeeding the late Philip M. Zenner.

Ryan was formerly executive vice president and vice chairman of the board of directors of the firm. Ryan is also president and director of Royal Typewriter Co., Ltd., and a director of Royal Precision Corp. and RMB Corp., Royal McBee subsidiaries, and is on the board of Kaysam Corp. of America.

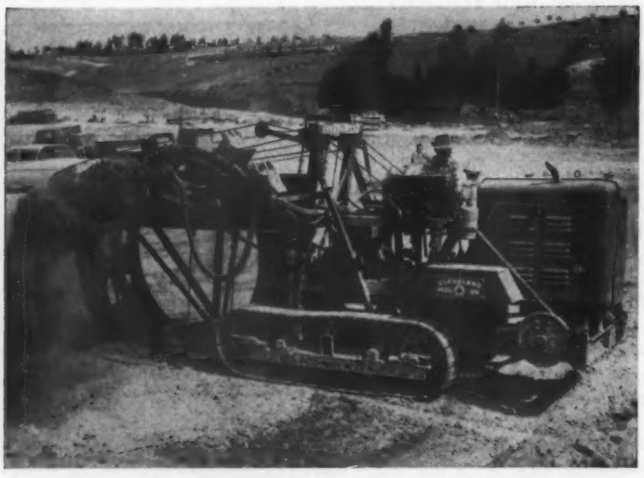
The main production plant of Royal McBee in Hartford, Conn., is currently undergoing a million-dollar 15-month modernization program that calls for new equipment and conveyor units to be installed in the 575,000-square-foot facility.

Book on power systems' transformers, generators

■ "Transformers and Generators for Power Systems," a new book published by The Philosophical Library, is written for the engineering student with a knowledge of physics, for the engineer concerned with design and manufacture, and for the operating engineer. The text is divided into two parts, the first dealing with the transformer and the second with the synchronous machine. Figures and references are numbered separately; a subject index is provided for each part.

The book stresses practical information. Among subjects covered are arrangements of winding design and their relation to the parameters of the transformer; transformer insulation; losses, temperature rise, and cooling; abnormal conditions; voltage regulation; and special types of construction.

Copies are priced at $12 each and may be ordered from the publisher, The Philosophical Library, 15 E. 40th St., New York 16, N. Y.



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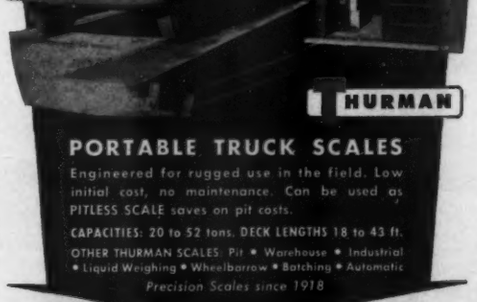

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Manufacturer Memos

Richard V. Oelerich has joined **D. D. Kennedy, Inc.**, representatives of Allis-Chalmers Mfg. Co., Bucyrus-Erie Co., and Warner & Swasey Co. He fills the newly created post of special sales representative and will devote his efforts to the earthmoving and heavy-machinery department.

Thornton F. Bradshaw has been elected to the board of directors of **Atlas Powder Co.**, Wilmington, Del. He is a vice president and member of the board of The Atlantic Refining Co., and also president of the Chamber of Commerce of Greater Philadelphia.

Hercules Galion Products, Inc., Galion, Ohio, has named **C. I. Bohmer** construction-equipment manager, with headquarters in Columbus. He will emphasize the establishment of new markets for transit mixers. In his new post, Bohmer joins his son, **Robert A. Bohmer**, product manager of the transit-mixer division since 1955.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has appointed **Joseph M. Duncan** assistant general manager of the Washington, D. C., office. He had been manager of Industries Group sales there since 1959.

Robert B. Bradley, vice president and executive head of International Harvester Co.'s Construction Equipment Division.

Robert B. Bradley has become vice president and executive head of the Construction Equipment Division of **International Harvester Co.**, Chicago, Ill. Elected by the board of directors, he succeeds Harald T. Reishus who has retired.

Bradley is also president of International Harvester Co. of Canada, Ltd. He joined the company in 1929 as a salesman.

Chauncey B. Smythe, president of **The Thew Shovel Co.**, Lorain, O., was recently honored with a two-program marking his fiftieth year of service with the company. The program included a dinner and reception in his honor, and an Employee Day celebration at which he was presented with a bronze plaque.

George E. Hammel is the new manager of the Chicago branch of **Euclid, Inc.**, Cincinnati, Ohio. Previously, he was manager of the Peoria, Ill., branch.

Clarence E. Killebrew has been elected president of **Canadian Clark, Ltd.**, St. Thomas, Ont. He is also president and a director of the parent firm, Clark Equipment Co., Buchanan, Mich., and general manager

Clarence E. Killebrew, new president of Canadian Clark, Ltd.

the company's Construction Machinery Division.

As president of Canadian Clark, Killebrew succeeds **George Spatta**, who has become chairman of the board of directors. Spatta is president of Clark Equipment.

Ronald J. Smith, plant manager of Canadian Clark, was elected a vice president, and the plant controller, **John A. Meyer**, was elected assistant secretary.

Detroit industrialist **Gordon Patterson** was elected president and a director of **The Yale & Towne Mfg. Co.**, New York, N. Y. Patterson had previously served as president of the Square D Co.

He succeeds **Gilbert W. Chapman**, who retired after 11 years as president of Yale & Towne.

Patterson continues as a director of Square D and also as director of National Malleable & Steel Castings Co. Earlier, he was an officer of several subsidiaries of U. S. Steel Corp.

W. Glen Hicks is the new sales manager for trailers for **Gar Wood Industries, Inc.**, Wayne, Mich. He will be responsible for national marketing of Gar Wood hopper and end-dump trailers. He makes his headquarters in Wayne.

NEW STOW HY-CYCLE VIBRATOR DELIVERS TWICE AS MUCH AGITATION AS 60-CYCLE UNITS

According to construction superintendents who have tried the new STOW Hy-Cycle Vibrators,* it's "the most economical, smoothest operating vibrator" they've ever used for work on cement walls, foundations and columns where top strength, smooth finishes . . . without patching and grouting — are required.

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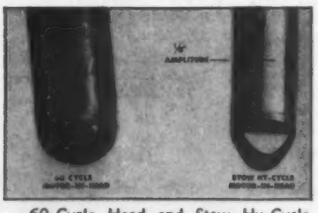
* names on request



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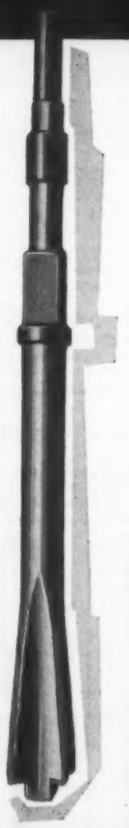

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